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Railway Age

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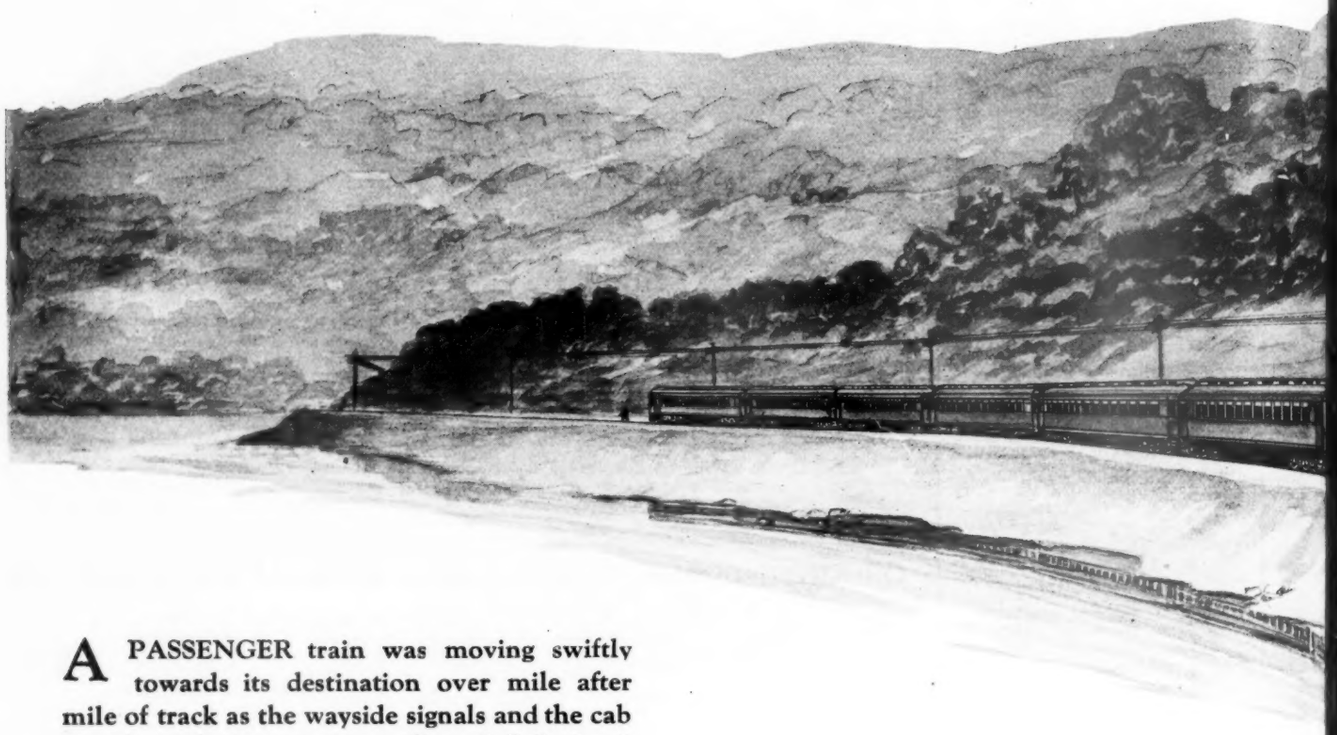
In this Issue

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

The Cab Signal



A PASSENGER train was moving swiftly towards its destination over mile after mile of track as the wayside signals and the cab signal on the locomotive indicated "all clear" ahead. The country through which the train was passing was growing more rugged each minute. Curves, hills and other physical characteristics restricted the view of the engine crew to very short stretches of tangent.

Finally the train passed a wayside signal which indicated "proceed"; the same indication was also carried on the signal in the cab. After the train was well into the block, the cab signal suddenly turned red. The engineman immediately brought his train under control, prepared to stop short of any obstruction, and proceeded cautiously. As he rounded a curve he found the track obstructed by a rock slide which had just fallen from a nearby hillside. This slide as it fell, broke the pole line and the signal wires, which resulted in the engineman *instantly* receiving an indication on his cab signal of a dangerous condition ahead.

Had the engine not been equipped with the continuous cab signal, the engineman would have had no warning of the changed conditions.

"Union" Cab Signals, *continuously* controlled and constantly visible, give the engineman a continuous indication of the conditions ahead. They are constantly at the control point, ready for immediate action. Information of changes of conditions, whether the changes are more restrictive or less restrictive, comes to the engineman at the instant the changes occur, and regardless of the position of the train in the block. Write for the latest bulletin "The signal in the Cab."

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Railway Age

Vol. 89, No. 7 August 16, 1930

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Concerning Inland Waterways

"NATURE," said Secretary of War Hurley, in a radio address on July 21, "has provided our nation with far-reaching waterways." Nature seems temporarily, at least, to have left the waterway enthusiasts to rely upon their own resources in providing water for the waterways of the Mississippi valley. This year, as was true last year, most of these waterways have so nearly dried up that navigation on them has become impracticable and shippers have had to rely upon the despised railroads. The water in the Mississippi river recently has been so low between St. Louis and Cairo that the government-owned barge line operated by the Inland Waterways Corporation has not been receiving grain and other bulky commodities at St. Louis. Waterways, according to their proponents, are intended to handle heavy, low grade commodities, but the barge line has been soliciting only light merchandise or package freight. Consequently, most of the traffic for the barge line is being shipped by rail from St. Louis to Cairo for trans-shipment by water south of Cairo.

Major General T. Q. Ashburn, chairman of the Inland Waterways Corporation, and, of course, one of the principal protagonists of waterway development, said a short time ago that the barge line had refused more than one million bushels of grain for export because low water in the Mississippi had made it impossible to operate large barges in the customary way. A newspaper dispatch published on August 11 stated that the Mississippi river was the lowest at Alton, Ill., within 25 years. The Illinois river, which is to be part of the Lakes-to-the-Gulf deep waterway, was reported as the lowest in many years.

Waterway advocates claim that increased diversion of water from Lake Michigan through the Chicago river and drainage canal would help the situation on the Mississippi. The diversion at present is 7,000 second feet. The maximum capacity of the drainage canal is 10,000 second feet. By inquiry among experts the *Railway Age* has elicited the information that an increase of the diversion from Lake Michigan to the maximum capacity of the drainage canal would, in a period of low water such as the present, raise the level of the Mississippi river at St. Louis not more than six-tenths of a foot. However, as the negro said when he was arraigned for killing a man for fifty cents, "A little here and a little there, it all helps;" and the waterway advocates are at present unusually hard pressed for arguments.

There is so little water in the Missouri river, on the channel of which, under present plans of the government, there is to be spent more money than was ever before contemplated, that if its channel were ten times as deep as it is it would be unable to float the lightest of freight-carrying craft.

As regards the Ohio river, an Associated Press dispatch from Portsmouth, Ohio, dated June 5, 1930, said: "Boat traffic on the Ohio river between Pittsburgh and Cincinnati was abandoned temporarily today when water dropped so low as to make navigation impossible." That was less than nine months after the completion of the nine-foot channel in the Ohio had been loudly celebrated.

This is the second consecutive year in which low water in the Mississippi river system has seriously interfered with navigation. On the upper Mississippi, according to the report of the Inland Waterways Corporation, "the rainfall during the months of May and June (1929) was very deficient and by mid-June we were beginning to have trouble on account of low water." On the upper Mississippi, according to the same report, "within the last five months of 1929 we encountered every detrimental navigating element presented in the almost eleven earlier years of operation and in an aggravated degree, resulting in serious interruptions to schedules and revival of the service complaints which had been almost entirely eliminated." During the time in 1929 when there was not enough water in the Mississippi above Cairo, there was experienced on the Warrior river "the greatest flood period in our career, considerably slowing up operations," said the report of the Inland Waterways Corporation. During three weeks of July, 1930, navigation on the Warrior river between Mobile, Ala., and Birmingport was suspended during the repairing of a lock.

So this is inland water transportation! During winter inland waterways in the northern part of the country are closed by ice. During some summers large parts of them are rendered unnavigable by low water. In the springs and summers of other years they are rendered unnavigable by floods. They are to be used to "relieve" the railways of traffic; but the railways

have to be kept ready at all times to handle the traffic of which the waterways are intended to "relieve" them. The waterways are to be used both to reduce freight rates and increase taxes; but, of course, they can reduce freight rates only when they can be kept open, while the interest on the investment in them and their cost of maintenance, which must be paid by the taxpayers, go right on whether they can carry freight or not.

Apparently if inland waterways are to be made a success waterway enthusiasts will have to become as proficient in controlling nature as they are in controlling Congress. When they are able to turn on and off the water needed for navigation in the Mississippi valley as readily as they can get appropriations from Congress they may be able to support some of the claims they make as to the benefits that will be derived from the expenditure of hundreds of millions of dollars upon waterways which they say have been provided by nature, but which nature seems to have forsaken.

Excessive Railroad Competition

NEVER was there a time when there was more acute need for frank speaking about the railroad situation than there is now. There is plenty of such speaking in the article by F. J. Lisman, which appears elsewhere in this issue of the *Railway Age*. Many railway officers will repudiate, and perhaps resent, parts of it. It should be borne in mind, however, that the policies and practices of the carriers look somewhat differently to those who study their effects on the railroad industry as a whole from the way they look to the officers of individual lines who adopt these policies and practices to further the supposed interests of their own properties. Those who wish to promote the progress and prosperity of the railway industry, rather than merely the progress and prosperity of individual lines, will find much more in Mr. Lisman's article with which they will agree than disagree.

The railroad industry is suffering severely from two major influences. One of these is the kind of regulation to which it is subjected. The other is competition. It is being injured by two kinds of competition. One of these is competition between the railroads themselves. The other is the competition of other means of transportation with the railways. From 1921 to 1926 the railroad industry made progress both in improving its service and in increasing its net operating income. Since 1926 it has continued to improve its service, but, in spite of all illusory appearances, the general tendency of the percentage of net return earned by it on property investment has been downward. This tendency was partially concealed in 1929 by many railways including in their net operating income mail pay that was earned in previous years, but it has been powerfully emphasized by the decline of 12.3 per cent in gross earnings in the first six months of 1930, which resulted in a decline of 33 per cent in net operating income, and made the percentage of return earned the smallest since 1921. The managers of individual railways can believe, if they like, that their task is almost solely to promote the prosperity of their own lines; but when the entire railroad industry earns at the annual rate of only 4.80 per cent in a year such as 1929 and only 3.61 per cent in the first six months of 1930, in spite of retrenchments, there are few managers indeed who can congratulate themselves that they have succeeded, by individualistic policies, in preventing their own railways from suffering relatively as much as others from influences affecting the railroad industry as a whole.

Competition and Financial Results

The principal immediate cause of the railway situation in 1930 is a decline of traffic; but it is also due to other important causes. Probably the most important of these is past and present excessive competition between the railways themselves. Such competition has been largely responsible for the comparatively poor financial returns gained when they have handled a record-breaking freight traffic as in 1929, and for the much poorer return earned thus far this year. In many parts of the country much more passenger train service is being furnished than the public needs or will use. There is no more obvious waste in the railroad industry than in the passenger service between Chicago and St. Louis. It is nothing new, but recently efforts have been made to reduce it by some kind of a pool of service and earnings. Apparently the only result of these efforts to date has been an increase in the service and the resulting waste. In almost every case of this kind some railway believes it has an advantage which it is determined to keep, almost regardless of whether or not there is available some method by which the operating expenses of all the competing lines can be reduced without any substantial impairment of the service rendered to the public. It is astounding how slow many railway managers are to learn that in many cases co-operation may be substituted for competition in such a way as to let each railway retain the advantages it possesses, and, at the same time, enable each road concerned to gain by effecting economies.

It is, however, as Mr. Lisman indicates, in competing for the traffic of big shippers that the railways indulge in the greatest rivalry in throwing away money that should be added to their net earnings. In his recent opinion in the western grain rate case Commissioner Eastman said that "where the movement of important traffic is controlled by large concerns which can divert it at will from one competitive route to another, the initiative of the carriers in this respect (that is,

in advancing rates) may be subject to paralysis. * * * It is a situation which calls for courage and co-operation on the part of the carriers, and if they are lacking in these qualities they will have themselves primarily to blame for the consequences which may ensue." The policy of the commission in making unwarranted reductions of rates and "passing the buck" to the railroads to take the initiative in making advances is open to criticism. It is unquestionably true, however, that, owing to excessive competition, the railways commonly do suffer from "paralysis" in dealing with big shippers, with the result of keeping down rates that ought to be advanced, of reducing rates that ought to be maintained, of rendering service which costs too much, and of affecting purchases in ways that not only increase expenses, but even invite prosecutions for rebating.

Influence of Big Shippers

One of the greatest needs of the railroad industry is the adoption of some policy or method which will relieve individual railways of the terror of the big shipper in which their officers live, move and have their being. Mr. Lisman says: "The country as a whole, or the railroads by groups or sections, need a rate czar." Mr. Lisman's statement has the merit of being to the point, but it lacks novelty, because practically the same statement has been made many times by railway officers. The reason why the railways so greatly fear the big shipper is that the traffic officers of individual lines have no confidence in each other. The traffic executive of each road fears to take the initiative in suggesting any advance in the rates of a big shipper lest a traffic officer of some competing line, in an effort to curry favor with the big shipper, and get more of his traffic, will tell him who suggested the advance. Traffic officers fear to oppose reductions in the rates of big shippers because of the same competitive practices.

This may sound like severe criticism of traffic officers, but traffic officers themselves make it with the greatest frequency and bitterness. Many big shippers unhesitatingly divert traffic from one road to another to reward those who support their demands and punish those who oppose them. A railroad "rate czar" in each territory would protect rates from the pressure of big shippers, but would not prevent the influence of traffic from being used effectively to control railway purchases or to cause extravagances in rendering service. If excessive competition between the railways themselves were stopped, there would still remain the problem of dealing with competition of other means of transportation which are subsidized, and at the same time hardly regulated, by the government, with the result that they are constantly diverting an increasing amount of traffic from the over-regulated railroads.

There seems to be no remedy for the ills of the railroad industry except more co-operative action regarding its problems by the chief executives of the various railroads. By united action they could stop the rendering of wasteful service, abolish the influence of traffic on purchases, and compel their traffic officers to desist from practices which constantly result in the making or maintenance of rates that are unduly low. If they were better organized to co-operate, not only could they present stronger opposition to government policies that divert traffic from the railways, but probably they could get more support in opposing such policies from leaders of railway labor organizations and railway employees.

Obstacles to Co-operation

The trouble with this solution of the problem is that the individualistic, competitive spirit is as strong among railway presidents as among other railway officers. They are constantly prone to use competitive methods to secure advantages for their own lines which actually result in reductions of the earnings or increases in the operating expenses of their own lines as well as of competing roads.

There has never been anything more admirable in the history of American industry than the ability and energy that has been shown by railway officers in developing and managing individual railway properties. The service rendered was never as good and the efficiency of operation never as great as now. Owing largely to excessive competition, however, railway managers, decade after decade, have largely thrown away the benefits that the railroad industry should have derived from the ability and energy with which they have managed the various properties. The public, and especially large shippers, have been the beneficiaries of efficient railroad management. Railway managers should seek to conserve a larger part of the benefits for investors in railway securities. Apparently they will never succeed in doing this unless and until they use, in co-operating with each other, as much ability and foresight as they use in developing and managing their own railroads.

Canadian Roads Buy Interest in Air Lines

THE announcement that the Canadian National and the Canadian Pacific have jointly acquired an interest in Canada's two principal air transport lines indicates the intention of these two railways to take as active a part in the development of air transportation in the Dominion as they have had in the development of its railway transportation facilities. The Canadian roads have acquired an interest in the Canadian Airways and the Western Canada Airways. The former operates airplanes carrying mail and passengers between Toronto, Montreal, Quebec, St. John and Moncton, while the latter has scheduled services for mail and passengers between Winnipeg and Calgary, and between Moose Jaw and Edmonton, with irregular service also to many other points in the Canadian northwest. Both of these lines are understood to have been

successful, and Western Canada Airways in particular performs a valuable service by providing a fast means of travel between many points without other service.

So far as is known, the Pennsylvania is the only railway in the United States that has yet exhibited sufficient interest in air transportation to invest money in it. Other railways have entered into traffic agreements with various air lines, providing for the transportation of passengers on through tickets via both train and airplane, but this is as far as they have gone. The air line investments of the Canadian roads have raised anew the question of what part railways in the United States ought to take in development of air transportation.

During the last two years, the air lines in the United States have had a mushroom growth. The map of the United States now shows few large areas which are not traversed by air transport lines. Most of the mail-carrying air lines have been financially successful, the passenger-carrying lines less so. However, the passenger-carrying lines, in spite of recent increases in rates, are carrying a substantial and still increasing traffic, and there is reason for the belief that with further improvement in equipment, more frequent service, and rates conforming more closely to the cost of operation, the passenger lines, as well as the mail-carrying lines, will be able to earn a profit.

There have been all sorts of predictions as to the effect which the further development of air transportation will have on the traffic of the railways. Most railway officers probably now feel inclined to discount the possibility of the air lines' cutting into the railways' passenger, mail and express traffic to a substantial extent. However, it may be pertinent to point out that the motor coach and the motor truck were similarly viewed with unconcern only a few years ago. There may be no occasion yet for railway officers to become concerned over the progress being made by the air lines. It is suggested, however, that the railways should give careful consideration to some action which will make sure that the future development of air transportation will not proceed at their expense.

Large Economies Possible in Timber Treatment

IN 1923 the Class I railways of the United States purchased 113,907,000 crossties, according to information collected from the railways by the Bureau of Railway Economics. Six years later, in 1929, the same roads bought 79,336,000 ties. In other words, their purchases of this basic material declined to the extent of 33,571,000 ties, or 31 per cent, in six years. This trend was not due to any retrenchment in maintenance, for 1929 was a most liberal year in this respect. Neither does it reflect any decrease in construction activities, for more miles of new lines were built last year than in 1923. Rather, this decline is attributable to the increasing effect of the treatment of ties, a practice which has been more widely adopted in recent years, and the results of which are now becoming increasingly evident.

It has long been contended by the advocates of timber preservation that the railways could double or treble the life of their crossties by treating them adequately with preservatives and then protecting them against mechanical wear by the use of tie plates of adequate size, etc. Those roads which pioneered in the development of timber treating practices are now reaping handsome rewards.

Definite evidence of the value of the treatment of crossties is presented in figures compiled by a joint committee of the American Wood Preservers' Association and the American Railway Engineering Association, showing the annual crosstie renewals per mile of maintained tracks for some 27 roads. These figures range from as low as 50 per mile to as high as 250 or more. It is not to be expected that the roads which are now showing abnormally low figures will be able to continue their renewals at such low rates indefinitely, but there is ample support for the belief that a permanent renewal rate of 100 ties per mile is possible. If this should be attained universally, the present annual requirements of the Class I roads would be cut in half. It has been estimated by C. C. Cook, president of the American Wood Preservers' Association, that the railways are now saving $145,000 per day by the treatment of their ties and other timber. When the practice becomes universal it is probable that this saving will be doubled. The economy is one which some roads are already securing and toward which other roads are working. In view of such figures it is hard to see why other roads continue to use untreated ties.

There is another phase of this problem that is worthy of consideration by the railways. They use large quantities of timber for purposes other than ties, and the wood is exposed to the same attacks of decay as ties; yet comparatively little progress has been made in the treatment of the vast quantities of other timber used, excepting for bridge timbers and piling. Relatively little aid can be expected from the commercial timber treating companies in "selling" the economy of timber treatment to railway officers for, like the timber industry itself, they are not organized to do promotional work. Rather, progress in the treatment of this additional timber must result from the recognition by railway officers of the economy of the practice. That much timber of this character can be treated with economy is shown by the work done by one road which treated more than 1,000,000 cu. ft. of miscellaneous timber, other than ties and building materials, last year.

The reduction of the crosstie requirements of the railways in the last few years affords such striking proof of the economy of treatment that it is surprising they are not extending this protection more rapidly.

A Diagnosis of Railway Ills

Railroads faced by serious competitive conditions need to unite to meet them, revising methods to cope with present-day conditions

By F. J. Lisman*

DURING 1930 the railroads of the United States will probably fail by nearly 500 million dollars to earn the standard statutory return to which they are entitled by law—that is, 5¾ per cent on their valuation. How much better will they do in 1931? That depends, of course, on how much gross earnings are going to be increased, if any, during that year and how much operating expenses are going to be reduced.

It is time for the railway owners and managers to boldly face the future and take stock of the points of weakness and strength in the situation.

"The writer believes that the short and long outlook for the railroads of the United States is far from promising and cannot improve unless the unfavorable facts are visualized and energetic joint action is taken to overcome them. Railroads with rare exceptions have shown very little initiative during the last generation; they have paid very close attention to detailed operating problems, but have not kept ahead or even abreast of changing conditions . . . . . Changing conditions which during the last generation have affected nearly every walk of life can best be faced by the railroads as a group, instead of singly."

In the writer's opinion, the elements of weakness are:

1. The constant whittling of the rate structure brought about to a large extent by the railroads themselves for competitive purposes, as hereinafter fully discussed.

2. The further loss of passenger business. In 1929 there was some hope that this loss was going on at a diminshed rate; during 1930 it is going on at an increased rate, although this is partially due to the general decline in business and pleasure travel.

3. Loss of profitable, as well as unprofitable, l.c.l. and carload freight business to highway competition.

4. In the oil producing regions, the loss not only of crude oil but also the forthcoming loss of the much more profitable traffic in gasoline, owing to pipe line competition.

5. The continuing consolidation and co-ordination of various industries which will gradually eliminate wasteful competition among themselves and thus reduce the amount of competitive cross shipments. For example, the various manufacturers of meal and other cattle feeds are endeavoring less and less to compete in territory not strictly tributary to their localities. Another example is the result of a recent important consolidation in the soap industry.

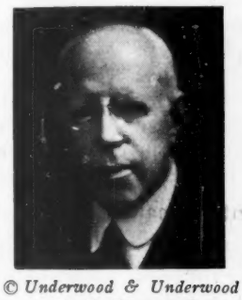
6. Further possible loss in certain commodities or in reduced rates, owing to government subsidized waterway competition.

7. Coal traffic is likely to further decrease with the growing competition not only from hydro-electric development, pipe lines carrying oil, but pipe lines carrying natural gas, which are under construction to practically every city of 250,000 people or more, with the exception of Boston, Rochester, N. Y., Providence, Washington, D. C., Minneapolis, Seattle and Portland, Ore.

8. With very few exceptions, railroads have not learned to "merchandise" transportation. Railroads in general and the traffic departments in particular have not drawn much new blood from the outside and the traffic departments largely suffer from ingrown mentalities. Most of the traffic men started railroading when transportation sold itself. To quote from a pamphlet written by W. H. Manss, former railroad officer now living in Chicago: "Most traffic men grew up when they had a seller's market for transportation and do not know how to adjust themselves to present conditions, where railroad transportation must be marketed or disposed of to consumers against various competitors; in other words, to a buyer's market." Many traffic men do not even thoroughly know the geography of their own country!

The railroads have "solicitors" or, what in mercantile parlance are designated as "order takers." They do not have salesmen. Very few of these "solicitors" trouble themselves with the detailed problems of the men on whom they call; neither are they prepared to make constructive suggestions to them. They think they have done their duty when they call frequently, ask whether they are getting their share of business, whether the service is good and leave a few cigars.

Work in the railroad traffic department should have a big appeal to young college men because in such a department, if properly run, they can not only learn about the movement of traffic, where the different products originate and how they are distributed, but it brings them into contact with practically every line of business and the problem of every producer and distributor. Somehow this appeal has not been brought to the college men at all. One wonders why." †



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F. J. Lisman

*Editor's Note—Mr. Lisman, as *Railway Age* readers know, is one of the best friends the railroads have among the banking fraternity. He is also one of their most penetrating critics, but his views are always constructive; and railway men will find the opinions expressed herein stimulating, even though they may not wholly agree with them.

† Some 40 odd years ago the writer, then a boy living in Chicago with an "itch" for railroading (having the above point of view), tried, without success, every freight office in Chicago in the hope of getting a job at the then prevailing rate of wages—$5 per week.

9. The most important of all—in fact, probably more important than all the other items together—the railroads suffer from cowardice in dealing with the shipping public. They lack the backbone not only to hold up and to raise rates wherever possible, but also to insist that the cost of large items of supplies such as rails, etc., be reduced commensurate with the reduction of similar products sold to other consumers.

10. Labor dominates Congress today to the same extent as it did when the Adamson bill was passed 14 years ago. This control of Congress will not and cannot be broken unless the railroads as a group will boldly face the situation and put their case before the very large class of voters—that is, the farmers and others—and secure their co-operation toward reducing or at least holding down the cost of transportation. There are more voters interested in proper adjustment of railroad wages to the cost of living, than there are railroad employees. It is a question of proper organization and presentation of facts.

Railroad employees have mostly very responsible positions and are entitled to liberal pay which they can only obtain when the employing companies themselves are prosperous. Their compensation should be adjusted both up and downwards, according to the actual cost of living based on retail prices. Rules designed merely to create work for men not needed and which increase the cost of transportation service, must be eliminated as an injustice to all parties concerned.

The Elements of Strength

The elements of strength in the situation are:

1. Operating efficiency demonstrated by getting better results out of every dollar spent for maintenance of way and equipment and for conducting transportation; possibly also in connection with general expenses. This is reflected by the great reduction in fuel expenses, by the greatly increased number of ton-miles per man-hour, etc., etc. No doubt some further progress, but at a greatly reduced rate, can be made in that direction for some years to come but far from enough to overcome the elements of weakness above enumerated.

2. The realization on part of the I. C. C. of the need for increased revenue as evidenced by the recent advances in class rates in the East, and Middle West and in many other ways. These particular cases have been pending for several years and have only been adjudicated after testimony was taken all over the country. The record in these cases runs up to many hundreds of thousands of pages. In the Western Case alone, no less than 544 lawyers, who represented railroads, shippers and official bodies, had to be heard. The decision just rendered in the Grain Rate Case is not necessarily a proof to the contrary because the Hoch-Smith resolution and the present condition of agriculture affected this situation.

Outlook for 1931

Disregarding political "Pollyanna" predictions, competent authorities are gradually agreeing about the unfavorable business outlook for 1930 as a whole; there is a tendency toward an agreement that times cannot improve substantially until there is a new crop under way which will bring somewhat better prices than those now prevailing. The election of a very radical Congress at the forthcoming November election is hardly going to be helpful although such a Congress will not assemble in regular session until December, 1931.

The best which might reasonably be looked for by way of railroad earnings for 1931 is recovery of one-half the loss of 1930 compared with 1929. Thereafter, unless operating expenses are substantially reduced in 1931 and the sources of revenue increased here and there, railroad credit is likely to be seriously injured by some substantial reduction in dividends (which fact may already have been discounted in the stock market) and, in some cases, by earnings which will fail to fully meet interest charges.

The problem, therefore, divides itself into one of increased revenue brought about by increased rates which cannot be done hurriedly, and reduction in operating expenses, which also is a slow process.

In these pages the writer has frequently referred to the fact that traffic men, when in convention assembled and otherwise, have not the courage to suggest an advance in rates for fear that their competitors will tell the shippers of such a move and that they thereby may lose some competitive traffic. In other words, everyone is afraid to bell the cat!

It is quite easy, and has become customary, to blame the Interstate Commerce Commission for the low rate structure but the real fact is that probably no one realizes the need for additional revenue more than the Commissioners. They are desirous of co-operating with the railroads for that purpose, but they get very little help or encouragement.

Frequently some railroad which tenaciously fights a $200 cow case permits its traffic men to make a rate in order to locate some manufacturer on its line which will reduce revenues from this particular type of traffic from other shippers on the road by possibly thousands of dollars in gross, which means the same amount in net because the cost of handling is not reduced. This same rate "adjustment," as it is euphemistically called, may reduce the railway revenues as a whole in the particular section of the country by ten of thousands of dollars.

If the stockholders of the railroads fully realized the situation they would insist on offering resolutions at stockholders' meetings that no freight rate should be reduced without the consent of the board of directors or executive committee. If this responsibility were put upon the president and the directors, the president would be most loath to recommend rate reductions even though reasonably certain that his directors would approve his suggestions. However, more than this is needed.

Need for a Rate Czar

The country as a whole, or the railroads by groups or sections, need a rate czar. They need someone familiar with the rate structure problems who, after proper study will advise them where rates can be raised without doing injustice to particular trades or communities and insist that such rates be advanced. It may be taken for granted that the Commission will hearken to any reasonable requests along that line. It is certain that no one will take the position of rate czar unless assured beforehand of full support or, rather, of autocratic powers. The right kind of men are available, but whatever name may be suggested may not necessarily be acceptable to every railroad president in the particular group.

The presidents of the railways in the three traffic territories of the country should each select a small committee with full authority to select a traffic czar for their particular section, under an agreement that such selection shall become effective upon ratification by a majority. This would be a bitter pill to many highly individualistic presidents, but in the case of serious diseases, bitter pills are frequently needed.

As matters now stand, the railroad executives are

very much in the position of the famous Polish Parliament which never accomplished anything because every member had veto power. The consequence of this "right to object" was the total collapse of Poland.

Unsound Practices Reducing Net Revenues

A. Rates are whittled down by railroad men in many different ways. If some large shipper wishes to locate a new plant on a point served by one or more railroads, the traffic officers of these lines may try to get a special classification for his product and then ask for a lower rate for this new classification. We now have about 18,000 ratings of various articles, many of which come under different rate classifications in the three different rate groups; that is, Eastern, Southern and Western. Merely to state this fact is to show its absurdity! A rate czar could undoubtedly jack up many of these rates.

Taking rates at random; for instance, wooden furniture wrapped in burlap is carried at first class rates in the South, at one and one-half times the first class rate in the East and at double first class rates in the West. The same furniture in crates or boxes is carried at single first class rates in the South; one and one-half times first class in the East and the West. Either this rating is too low in the South or too high in the other sections. These discrepancies are particularly conspicuous on the generally unprofitable l. c. l. traffic. One wonders how many tissue copying books move in carloads! The rate on such carloads in the official or Eastern territory is fifth class while in the other sections of the country, it is third class. Undoubtedly under the right auspices equalization of these rates would mean an upward adjustment.

There is a certain amount of traffic moving. Possibly this traffic might be increased by intense development but as a whole, there are too many companies competing for the same volume of business and in consequence the railroads are suffering from the wastes of competition.

B. There are many gross abuses in the way of buying supplies from favorite shippers, etc., etc. The Commission is investigating this situation. Just as soon as it decides to summon a lot of traffic men and, under oath, compel them to state facts, a good many things of interest will develop. As matters stand today, the traffic men do not like to talk about it but some with bigger vision will be really delighted to be compelled to tell about the abuses of which they know.

Questionable Practices

In trying to dig into this situation, the Commission has undertaken a very "large order." However, if there is anything fundamental in the law, it is that there must be no secret discrimination or rebating, no matter how remotely. Sooner or later there will be brought before the Commission the well known custom of many railroads to buy given amounts of railroad fuel coal from mines located along their lines at a price above the market, provided a certain additional amount of commercial coal is shipped by the same mines. If one analyzes this practice in detail, it works out as follows: "A Mine" sells 100,000 tons of locomotive coal at 25 cents above the market to the "A & B Railroad," agreeing to ship 300,000 tons additional of commercial coal over the railroad. This 25 cents per ton on 100,000 tons is equal to a rebate to this coal mine of 6¼ cents a ton on 400,000 tons of coal shipped altogether. There is no denying this fact. The particular railroad might benefit and have all sorts of plausible reasons for doing this but there is not one additional ton of coal produced or consumed on account of this practice and some one, that is, "Mine A," gets an unfair preference over other competitors.

When the Commission gets through with this sort of thing and after long hearings when there will be all kinds of talk about BTU's, ash and sulphur content, etc., etc., the Commission is bound to rule that a rebate is a rebate even if disguised by technical terms.

C. Free storage or exemption from demurrage charges are not allowed by law. Holding loaded cars at junction points 10 or 100 miles away from the point of destination until the shipper indicates his readiness to receive the cars, is another practice not uncommon and was winked at even in times of car shortage.

D. Railroads are getting into the habit of building warehouses on a large scale at terminal points, in order to control traffic. Sometimes, if not all the time, these warehouses are used for indirect rate cutting by being rented to large shippers either in whole or in part at partly or wholly unremunerative rentals, or by other subterfuges.

E. One of the grossest abuses in the grain traffic is the stopping of cars in transit either for milling, rebilling or other alleged good reasons. It probably costs not far from $10 each time a car is held up and transferred and there is every reason why a proper charge should be made for this service. If that were done, there would be less of this abuse and possibly the rates on grain which goes straight through from the country elevator to the final destination, might even be reduced.

Commissioner Porter, in his concurring (in part) opinion in the Grain Case, has the following to say on this subject:

> It is admitted upon this record that it costs the carrier about $20 per car each time the service is rendered. It is a service of value to the person who requires it. Why should not he who uses it pay for it? This is the rule generally adopted in every other case of transit save grain. It is a sound principle economically, and undoubtedly the present practice in grain would not exist but for the inability of traffic officials to withstand the competitive pressure. We would not be without sound precedent if we established a universal charge on all transit sufficient to cover the actual cost plus a reasonable profit to the carrier.

The Freight "Scalper"

Twenty-five to fifty years ago the ticket "scalper" sold cut rate passenger tickets, frequently with the help of the railroads. He was a parasite who created no additional traffic and he has been completely eliminated. Of late the freight "scalper" has developed who assembles fairly long haul, small shipments into carload lots. The "consolidator" merely pays low carload rates on such shipments and thus the railroad revenue would appear to have been unnecessarily reduced.

Similarly the publication by certain roads of "container-mile" tariffs irrespective of the commodity moved appears to be almost suicidal. In ignoring the classification it cuts the revenue paid to the carriers by the higher class commodities properly able to pay a fair sum for their transportation.

A one per cent saving in the cost of operating expenses on all railroads, amounts to 60 million dollars a year. Probably several times this amount can be saved by stiffening rates here and there and by the elimination of the wastes of excessive and forbidden methods of competition.

L. C. L. Traffic and Highway Competition

The weekly car reports of the American Railway Association which show that about 27 per cent of all cars are engaged in l.c.l. traffic, cause one to wonder whether the railroads really know much about the costs of handling this traffic. According to the reports filed with the I. C. C., Class I railroads in 1928 originated.

in round figures, one and a quarter billion tons of carload freight and 37 million tons of l.c.l. freight. The revenue derived from carload freight was $4,318,000,000; from l.c.l. freight $512,500,000. From this it would appear that l.c.l. traffic furnished 2.9 per cent of the freight tonnage and earned 10.6 per cent of the total freight revenue. The revenue ratio from l.c.l. was, therefore, 3.65 times that of the carload business. Assuming the distance per ton handled to be the same, this would work out about 4 cents per ton-mile on l.c.l. business. There are no statistics available on the average distance which l.c.l. freight is hauled, but presumably such tonnage moves a very much shorter distance than the 347 miles which is supposed to be the average haul of a carload of freight. However, the above figures seem to indicate that l.c.l. cars carry only a trifle over one-tenth of the tonnage carried by all the railroad cars of the country. This would work out approximately three tons.

What Is Cost of L. C. L. Handling?

Very few railroads even know the cost of l.c.l. business and probably most of them have looked upon this traffic very much like the old lady who said she lost money on every pair of stockings she knitted, but she made it up on the quantity.

Disregarding the above statistics, further investigation would indicate an average loading of possibly nearer 5 tons and an average ton-mile rate even above 5 cents. This would produce 25 cents per car mile which, unless in the case of very long hauls, is utterly inadequate to take care of the cost of handling this class of traffic in and out of freight houses.

The average cost of handling 100 lb. through a fairly busy freight house one way is about 6 cents per 100 lbs., which means $2.40 per ton both ways. To this must be added the general overhead expenses and cost of additional switching. At 5 cents per ton-mile l.c.l. traffic has to be handled for 48 miles before there is anything left over for expenses, other than the physical handling of freight. No wonder that some of the most careful managers encourage trucks to take all such traffic moving less than 75 miles.

A committee of the U. S. Chamber of Commerce, some years ago, is said to have estimated that an advance of 50 per cent all around would be necessary on l.c.l. rates in order to enable the railroad companies to break even. This would mean just about one-quarter of a billion dollars or about one-third of the probable net earnings of the railroads of U. S. for the year 1930.

An advance of 50 per cent undoubtedly would drive away a very large proportion of the business which might be a blessing in disguise!

Should Local Business Be Discarded?

The railroads, instead of endeavoring to handle local freight and passenger business at a reduced loss, should boldly face the situation as to whether they should go out of this business entirely or whether there is a chance of getting some of it back and making a fair profit on it by instituting new methods. Such new methods may be brought about by co-operation with trucking companies, independent truckers or by helping shippers to solve their cost problems by shipping in containers, or in other ways.

It is very doubtful whether railroad men in general have really visualized the great change which has come about in local merchandising and the further changes which will certainly take place in the next ten years and which will not only affect the local, but a large portion of the through business.

The refrigerated or heated truck has arrived and will take commodities at the required standard temperature from producer to consumer. This competition may be met by a semi-refrigerated or heated container on wheels which may take, for instance, blueberries from Northern Michigan to a consumer in St. Louis, or vegetables from the field in Mississippi to the grocery store or hotel pantry in Boston. Progress with refrigerating and insulating materials has been amazing. It looks as though a little "dry" ice put into a truck or container, is about to take the place of the expensive and messy refrigerating system of the passing generation. This type of traffic is just commencing in the New England States.

If these things are bound to happen, may they not affect a large volume of business now handled in refrigerator cars? Furthermore the trucks are not only selectively absorbing the profitable l.c.l. traffic, but they are doing likewise with the carload traffic, leaving to the railroads the privilege of hauling light and bulky articles like corn flakes and straw hats.

In the South, rates were formerly fixed on the theory that cotton, being worth from 10 cents to 20 cents a pound could stand almost any freight rate because such freight rate, even if high, formed a very small portion of the value of a quarter ton bale of cotton. Now these high rates have attracted truck competition and trucks are hauling cotton for a distance up to 200 miles to Houston and other cities and bringing back various supplies.

An officer of the Pennsylvania Railroad, at the recent and most constructive Atlantic City Meeting of the Motor Transport division of the A.R.A. stated that about 30 per cent of the l.c.l. traffic has already been lost to trucks.

How Trucks Get Traffic

Another example: Now, at 7 p.m. the farmer may hear over his radio that the price of cattle closed strong in his market town. He will probably think that the market will open high next morning. He may go to his barn and load his truck with 6 to 8 steers and get to the stockyards even a hundred and more miles away by six o'clock the next morning. Or, he may telephone to the local truckman who may be ready to start at once.

The same truckman will also have a list of supplies which the people in the adjacent community want to get from the nearest market town and he will bring these back on his trip home. These requests will consist of everything conceivable—dry goods, groceries, repair parts for mowing machines, etc. While the railroads may be well rid of the short haul live stock traffic which has never been profitable, they may gradually lose some of the longer haul traffic.

Automobile traffic out of Detroit and other producing centers is being steadily cut into by the "truck away" practice. That is, trucks with big platform bodies haul up to four cars for distances up to 500 miles at rates as much as 20 per cent below the published tariff. All these new conditions are with us and must be dealt with.

Interwoven with store door delivery are other problems. Store door delivery does not merely mean actual delivery at the store door but may also mean delivery of a lawn mower, piano, radio, etc., at the door of a residence.

Possibly because the subject is so very complex, railroad men have been inclined to run away from it—but the road to success does not lie in that direction.

Another question to be squarely faced is whether the old-fashioned freight station is completely obsolete and whether all expenses of local freight houses should

be completely eliminated, except in the very few localities having no suitable highway connections with the outside world. The statement is frequently heard that a man employed at the station of a small community has to be paid anyway and therefore there is no extra expense involved in his handling the local freight. This is hardly correct because there is insurance, loss and damage and other incidentals; there is also frequently extra help and many a night shift might be avoided. With store door delivery of baggage and freight, telephone dispatching and handling of local passengers in highway motor coaches, many local agents would become superfluous.

Neither has the question of loss of local passenger business to the highway been faced. A few of the larger railway companies have bought interests in highway lines but the railroad industry as a whole has done comparatively little that is constructive.

It is understood that, at the instance of the Post Office Department, a bill has been introduced into Congress permitting motor coaches to handle mail. The railroads should have asked for such help long ago. There is a bill now before Congress, backed by the radical element (which has a fair chance of passing both Houses this Fall) which would prohibit the railroads from having anything to do with motor coach lines. Obviously, the public can be best served by motor lines which are not only operated in connection with the railroads, but are actually co-ordinated by direct lease or ownership, or otherwise, so that tickets may be good on either trains or coaches, that baggage may be checked through and that the necessary connections are guaranteed, etc.

In some of the northern states it may be desirable that local train service be substituted during the severe winter months when highway service is necessarily unreliable and sometimes even impossible.

Experiments at Joint Cost

We have railroad associations of all kinds which meet and discuss problems. The big problems come up before the railroad executives who generally agree to disagree and do nothing. The American Railway Association is very effective in its Car Service Bureau, Safety Devices, etc., but it certainly could do very much more in other directions.

The Class I railroads with over 5 billion dollars of gross earnings (with a diminishing net income) could certainly afford to assess themselves for a substantial amount—as much as a million or two per annum—in order to make experiments in a large way of how to hold or increase business. For example, group rates might be tried for families who wish to go to the mountains or the seashore in the summer. Many families are not really anxious to use an automobile for the trip but when it comes to paying, say 5 fares, or 18 cents per mile, they naturally figure they can run their Ford or Chevrolet for very much less. It might be worth while, at the expense of the railroads at large, to try out a variety of experiments in localities to be selected by a proper committee for the benefit of all parties concerned.

Similarly, store door delivery and off line delivery might be tried out, not on a basis of hostile competition involving a loss of net revenue, but on a self-supporting basis.

Motor coach lines are now handling passengers from New York to Chicago for $20 and to practically all points for one-third less than standard rates. Undoubtedly there is a large demand for long haul passenger business at lower rates. Rates per passenger per mile are meaningless from the revenue point of view. It is a question of car-mile and, particularly, train-mile earnings.

While the American public would not put up with the service which passengers receive for one-half or one cent per mile in certain countries of Europe or Latin America, it might well be worth while to try out passenger service at lower rates with inferior accommodations. It is quite possible that a $15 rate between New York and Chicago twice a week or oftener, would solidly fill 10 car trains which would mean the enormous sum of $12 per passenger train mile. Only an infinitesimal amount of this traffic would be taken from the present first class trains; some would be business from the motor coaches, automobiles, etc., and the bulk of it would be new business from people who want to visit their folks, look for a job, etc., but who cannot afford to do so at prevailing rates.

Competitive Trains Run at Same Hour

There is much waste in unnecessary through train service by competing companies starting trains at about the same hour. Probably the greatest waste in that direction is between Chicago and St. Louis, the very territory where it is reported that motor lines carry twice as many through passengers as the railroads. The same waste used to go on between the Twin Cities and Duluth. Some years ago the three companies engaged in this traffic agreed to pool the earnings on their through passenger business. They obtained the consent of the Commission to do this and have undoubtedly saved substantial amounts. The same thing can surely be done in many other directions.

Taking at random other situations: Trains on two competing lines between New York City and the Berkshires with Pittsfield, Mass., as a terminus, start out and arrive at about the same time. Undoubtedly the people of the communities served would be very much better pleased if the trains were staggered. The argument will hardly hold that the number of passengers actually traveling from New York to Pittsfield are very few, but that the public at the local stations wants service at the particular accustomed hours. Twenty-five years ago this might have been true but now the bulk of passengers in the Berkshires arrive at or leave the stations by automobile and a ten or twenty mile drive to or from the stations is less important than the actual leaving or arriving time of the trains.

This situation can be paralleled all over the country.

Recently the Eastern lines appointed a committee of important officers to study the passenger service problem. As usual in railway matters, the "standpatters" were in the majority while a minority report recommended very important changes.

Stock Ownership by Management

In studying railroad history and prosperity during the last 40 years, we find many companies now in high standing, whose stock in the early 90's was substantially worthless. Outstanding examples are Santa Fe, Union Pacific, Northern Pacific, Reading, Southern Railway, etc. The growth of the country, progress of the art of operation and good management have brought about the change. On the other hand, if we look for very rapid development within a comparatively short time, we find the Harriman Lines, during the life of the late E. H. Harriman, and the Van Sweringen Lines of recent years. In both of these cases, the dominant spirits in the companies were large stockowners and one wonders whether the principle represented by the old adage, "The eye of the owner fattens the steer," has not had much to do with this rapid change. The prompt change in the condition of the Frisco and Pere Marquette after

their financial reorganization, is probably due largely to a similar cause.

The very successful industrial enterprises make manager ownership a feature of their policy. Outstanding examples, as far as the public knows, are General Motors and Bethlehem Steel Company. The question naturally presents itself, do the railroads offer enough incentive to their officers to make money for the stockholders or do the railroads suffer from management with a comparatively small stock interest in the property but a very large human interest in retaining the power and glory of their positions and the permanency of their jobs? Does this interest in holding their jobs extend all the way down the line and develop "yes men" rather than men with initiative and force?

Material Costs

One also wonders why steel rails which sold as low as $16 per ton during the depression of the 90's and at $28 per ton up to the outbreak of the World War, should be selling at $42 even now, or 50 per cent above pre-war prices and probably proportionately higher than plates and beams. It is quite true there is a high tariff on rails but nevertheless some time ago the Boston & Maine had the courage to buy imported rails. It is said that of late American railroads have been unable to get fair quotations on steel rails from abroad. One cannot help but wonder why this is. Possibly the high price of rails may be due to the anxiety of all the large railroads to stand well with all the big steel companies, in order to get a share of their tonnage. Again—are the railway men as a group too timid to bell the cat?

The present freight car costing $2,000 is quite a different car from the pre-war box car which sold at $1,000. Still, a difference of fully 100 per cent in price seems somewhat excessive. Similar remarks apply to locomotives.

Can this difference be due to the fact that the number of car and locomotive builders has been greatly reduced, or is the price of the metal rather high?

Summing Up

Many economists of international standing privately express the opinion that, metaphorically speaking, world trade is now in the biblical seven lean years; on account of the unpopularity of such a pessimistic viewpoint they do not utter it publicly.

But be this as it may, for the reasons herein above stated, the writer believes that the short and long outlook for the railroads of the United States is far from promising and cannot improve unless the unfavorable facts are visualized and energetic joint action is taken to overcome them.

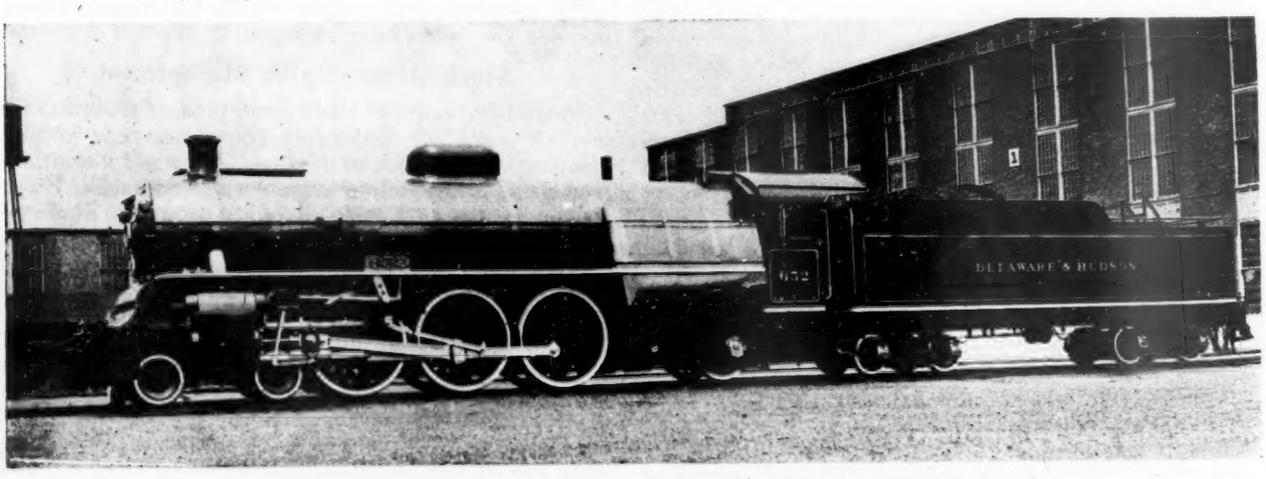
Railroads with rare exceptions have shown very little initiative during the last generation; they have paid very close attention to detailed operating problems, but have not kept ahead or even abreast of changing conditions. Most railroad men have acquired the habit of blaming the Commission for such lack of initiative instead of taking the blame to themselves—it is so easy to pass the buck!

There is wanted absolute thorough co-operation to represent the necessities of the railroads to the public. To quote President Downs of the Illinois Central: "The battle for continued success must be fought on two fronts—more revenue and less expense" and it may be lost on either.

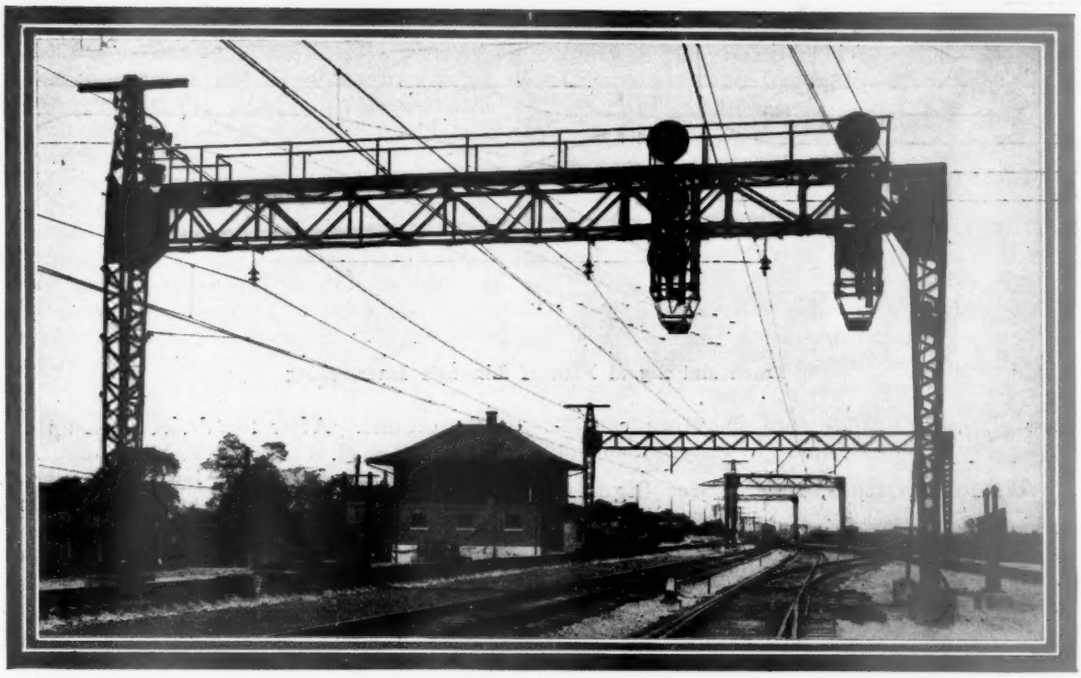
1. Wasteful expenditure of taxpayers' money for waterways might be stopped if it could be shown to them that it is wasteful.
2. Legislation unduly favoring railroad employees, not at the expense of the railroads alone, but at the expense of the users of transportation—all of us—can also be checked by a fair presentation of the actual facts.
3. The traffic department must be "rejuvenated" with men of vision who will look at the transportation problem from the consumers' point of view; that is, they must show the shipper advice and service which is worth, if anything, more than present freight rates, instead of placating him by reducing his rates. Traffic men must visualize that their principal job is to produce net dollars and not carloads filched from competitors.
4. Highway competition on passenger and freight traffic must be faced and dealt with courageously and in a big way.
5. Rates, wherever possible, must be adjusted upwards. This can only be done by some one whose decisions cannot be used in a competitive way against particular carriers. Certainly rate advances in many cases would deprive certain railways of some traffic and revenue but they would just as surely benefit each one of them by way of additional net income. Let us have "rate czars." If no agreement can be reached in the three rate sections, let us at least begin in one section.

Changing conditions which during the last generation have affected nearly every walk of life can best be faced by the railroads as a group, instead of singly. Railroad executives are very strong individualists and in their ambition and efforts to strengthen their own companies, they are forgetting that "in union there is strength."

* * * *



A Streamlined Delaware & Hudson Locomotive of the 4-6-2 Type



View Looking East Through the Plant; Tower at Left

Big Four Installs
Simplified Interlocking
With no Mechanical Locking

Illuminated diagram includes signal levers and movable track sections repeating position of switches

By C. F. Stoltz

Signal Engineer, Cleveland, Cincinnati, Chicago & St. Louis, Cincinnati, Ohio

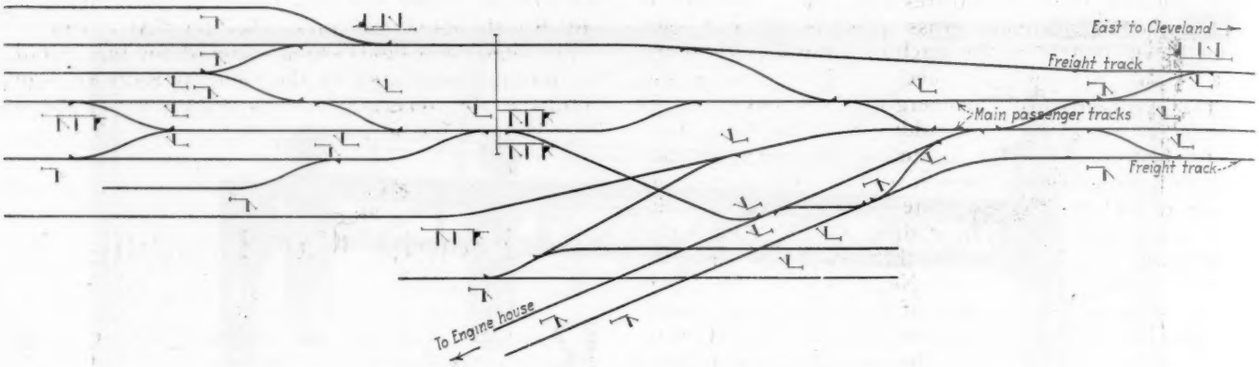
SIMPLICITY and facility of operation are the features of a large electric interlocking plant recently installed by the Cleveland, Cincinnati, Chicago & St. Louis at Linndale, Ohio, six miles west of Cleveland. This new interlocking is located at the west end of the new electrified traction zone of the Cleveland Union Terminal. The locomotives for about one hundred New York Central lines passenger trains are changed daily from steam to electric, or vice versa, at the Linndale plant. The track layout was, therefore, designed to facilitate changing locomotives as well as to expedite the movement of numerous freight trains which are handled by steam locomotives through this territory, but which do not go through the new Cleveland passenger terminal.

On account of the numerous train movements at this point, considerable study was given to the choice of a plant that would provide, with safety, the greatest flexibility and rapidity of manipulation and operation. Other features desired were simplicity of design, economy in first cost and maintenance, and adaptability to future track changes and additions.

Reason for Using New Type of Control

To accomplish these results in the best way, it was determined to use a machine of the centralized-control type, providing the simplest possible controlling devices for switches and signals and giving the operator complete information at all times as to all conditions affecting the operation of the plant.

The safety features of mechanical locking have been so surrounded by electrical protection in the modern interlocking plant, that a machine of that type, with its resultant increase in size and other complications, only tends to retard the manipulation of the plant and affords no safety features not already covered by adequate electrical protection. That complete reliance can be placed on the electric circuits alone has been demonstrated by the successful operation, over a period of years, of remotely-controlled switches and centralized traffic con-



Track and Signal Plan of Linndale Interlocking

trol systems. These principles were, therefore, considered to be equally applicable to short-distance control.

Small Levers for Switches, Buttons for Signals

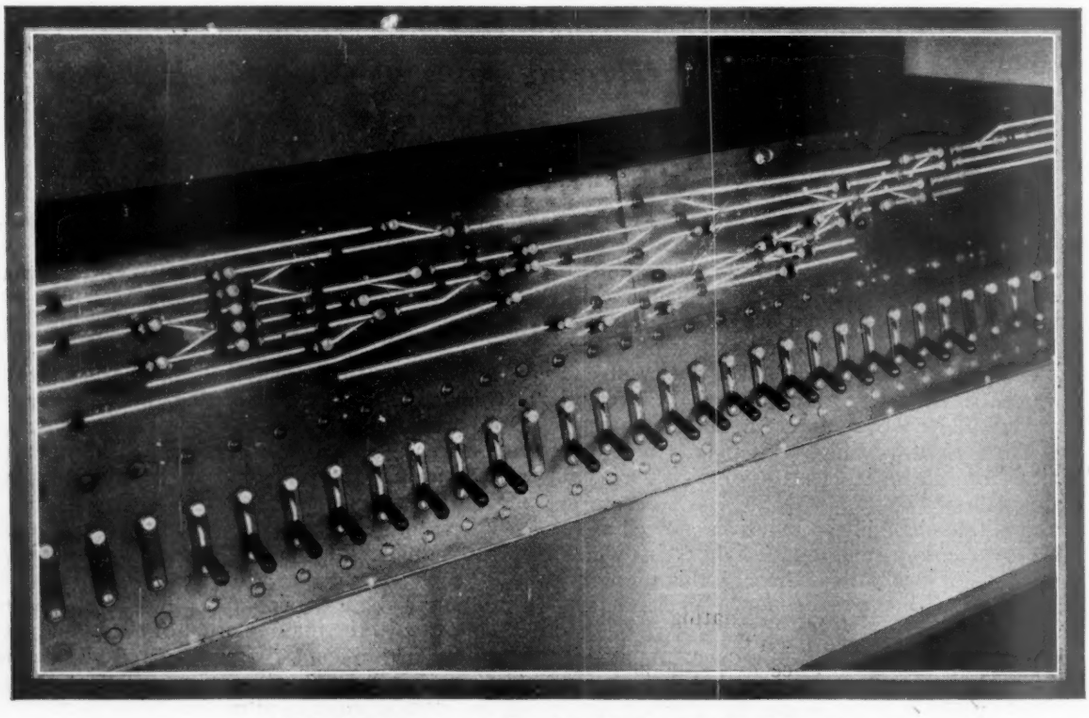
The machine is quite small, only 67 in. long, and the operator seated at the desk has all of the controlling switches within easy reach. The diagram before him reproduces the track layout. A lever directly below a switch or crossover on the diagram, operates the corresponding switch in the track, if conditions are safe for doing so. There are 23 levers controlling the 33 switches, 9 spares being provided for future additions. A light below each lever indicates when the switch is moving and, after it is over and locked, the electrically-operated switch points on the track diagram move to the new position of the switch. A red light above the lever indicates to the operator that the switch can not be operated. A lever movement is entirely ineffective if made while the red light is burning, even though the route locking relay should subsequently pick up.

The signals are controlled by a number of buttons, each mounted at the location on the track diagram corresponding to the signal location on the track layout on the ground. After the desired line-up of switches has been effected, a turn of the button clears the signal. A lighted arrow beside the button indicates when the signal has actually cleared. A total of 34 buttons control the 40 signals.

Color-light signals and 110-volt d-c. switch machines were used throughout the plant, which is protected by approach, detector, and release locking and SS control.

Special Control System

The elimination of mechanical locking and lever locks made it necessary to break the switch control circuits through the route-locking relays without sacrificing cross protection. It was further desired that a switch machine respond only to a lever movement that is made while the locking relays are energized, thus preventing the switch operating after the track circuit had cleared, the object being to prevent an improper switch movement during a momentary loss of train shunt. Another benefit derived from this type of control, which makes a lever movement effective only at the time the switch can operate, is that the operator cannot fail to observe the indication.



The Machine Is of the Centralized Control Type

In addition to these features this switch control circuit embodies adequate cross protection. For each switch lever there is in the machine a small quick-acting relay which is completely checked. If it remains improperly energized or de-energized, no movement of the switch can occur. In addition, a standard slow-acting neutral d-c. relay located in the tower is used for each switch lever, which can be energized only when all of the desired route-locking relays are up. Two wires run directly from the polarized control element in the switch machine to the rugged pole-changing contacts on the switch lever. Negative 110 volts d-c. is applied constantly to one side of the pole-changer, while positive 110-volts d-c. is applied only for a duration of about one second, provided the lever movement takes place while the route-locking relays are up. The cross-protection value of this polarized circuit is further enhanced by the use of a high-resistance winding in the switch-controlling device, together with an additional series resistance. Also, a separate cable is run to each switch or crossover, two wires being used to energize the polarized switch-repeating relay in the tower, from the pole-changer and point-detector contacts in the switch movement, using 110 volts d-c. Flexible single-conductor copper wire in flexible conduit, is run between the terminals of the switch machine and a nearby concrete junction box, in which splices are made to the parkway cables.

The polarized control device in the switch machine is entirely enclosed and sealed, and is so designed and mounted as to maintain the polarity last received by it, and so as not to be affected by vibration. The switch will always follow the position of the polar element, receiving 110 volts d-c. energy from the bus wires. If switch points are obstructed or not in proper adjustment, the overload coils become energized, which cut off the operating current until the operator restores the lever to the original position. He may then repeat his effort to operate the switch. The switch mechanism is protected by a clutch in the motor drive until the overload device has time to operate. The operating current is broken by large carbon-to-carbon contacts, provided with a magnetic blow-out. A magnetic brake then functions in such a way as to stop the motor rotation almost instantly.

Signal Control Circuits

The signal control circuit is of the usual network type, in which a signal can be cleared only when every switch in its route, both facing and trailing, is locked in the proper position. For this purpose, the contacts of the polarized switch-repeating relay were used. The customary switch lever contacts were omitted, inasmuch as a switch lever movement is rendered ineffective with a train approaching a clear signal or while on the track circuit in the plant over which the signal governs.

The only other departure from ordinary practice was to break the signal control circuits over contacts of normally de-energized d-c. relays, which repeat the signal-operating buttons. This allowed the buttons to be quite compact and easily mounted on the track diagram, and reduced the number of wires between the machine and the relay case.

Track circuits are operated by alternating current to avoid foreign current influence from the 3,000 volts d-c. used for propulsion. Convenience and economy were effected by bringing all rail connections into the tower with twin conductor No. 9 parkway cable, locating the transformer, fuses and impedances for each track circuit directly above the track relay for that circuit.

The signal and interlocking material for this installaton was manufactured by the General Railway Signal Company, the construction work being done by the Big Four railway forces.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended August 2 continued the downward trend which has prevailed for the last three months, amounting to 918,335 cars, a decrease of 187,585 cars as compared with the corresponding week of last year and of 130,486 cars as compared with 1928. All classes of commodities shared in the reduction as compared with last year, while all except grain and grain products showed reductions as compared with 1928. Also all districts reported reductions as compared with both years. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, August 2, 1930

Districts	1930	1929	1928
Eastern	201,719	249,980	238,292
Allegheny	183,383	226,566	212,619
Pocahontas	52,828	60,701	55,518
Southern	120,043	143,076	144,346
Northwestern	146,256	176,251	158,449
Central Western	141,561	165,907	158,702
Southwestern	72,545	83,439	80,895
Total Western Districts	360,362	425,597	398,046
Total All Roads	918,335	1,105,920	1,048,821
Commodities			
Grain and Grain Products	62,878	75,062	55,847
Live Stock	17,728	21,609	22,887
Coal	136,459	159,470	154,466
Coke	8,541	12,359	9,099
Forest Products	41,555	67,758	66,157
Ore	57,719	74,309	62,296
Merchandise L.C.L.	234,926	259,957	257,194
Miscellaneous	358,529	435,396	420,875
August 2	918,335	1,105,920	1,048,821
July 26	919,349	1,102,553	1,034,326
July 19	928,256	1,079,968	1,033,843
July 12	915,985	1,066,414	1,024,925
July 5	792,141	911,143	850,947
Cumulative total, 31 weeks	27,681,372	30,882,951	29,454,635

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended August 2 totaled 58,453 cars, a decrease of 919 cars from the previous week and a decrease of 11,491 cars from the same week last year.

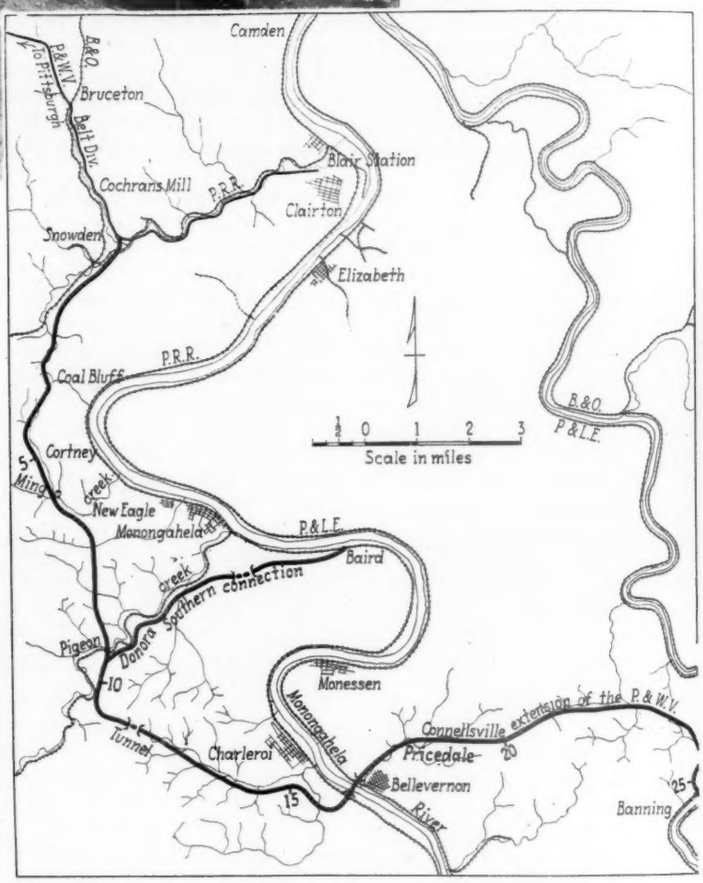
	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
August 2, 1930	58,453	28,418
July 26, 1930	59,372	28,961
July 19, 1930	61,208	29,848
August 3, 1929	69,944	38,876
Cumulative Totals for Canada		
August 2, 1930	1,823,631	1,064,886
August 3, 1929	2,054,520	1,296,942
August 4, 1928	2,000,052	1,207,109

THE REDUCTION IN FREIGHT REVENUE in Nebraska as a result of the lower freight rates on grain and grain products ordered by the Interstate Commerce Commission will this year, amount to $2,000,000 on grain shipments according to an estimate made by the state railway commission and based on movements from the point of production to the first primary market. In Montana, according to the Board of Railroad Commissioners, the amount will be $440,000 on shipments to interstate markets.

Many Achievements Feature

Maze of equipment, including 40 power shovels, in the proposed trunk line—

Construction Trestles and Narrow-Gage Equipment Were Used in Building Many of the Larger Fills



FROM the standpoints of purpose, difficulties encountered, speed of construction, equipment used and special structures, the new 38-mile single-track extension of the Pittsburgh & West Virginia to Connellsville, Pa., now about 75 per cent completed, is one of the most interesting and unusual pieces of railroad construction seen in this country in many years. In the first place, the new line is to be the connecting link in a proposed new trunk line from the central west to tidewater at Baltimore, Md., uniting the Wheeling & Lake Erie, the Pittsburgh & West Virginia and the Western Maryland. Speed has been the essence of the construction methods employed and at times hundreds of men and as many as 40 power shovels, supplemented by fleets of material-handling equipment, have been spread out over the work, producing a line of favorable grade and alinement through some of the roughest country in Pennsylvania. Altogether, approximately 7,100,000 cu. yd. of grading, largely in rock, will have been required when the work is completed, along with the placing of about 77,000 cu. yd. of concrete in piers, abutments, arches and other masonry structures. Two tunnels, with a combined length of 1,935 ft., will penetrate mountain ridges, and there will be 41 major bridges and viaducts. A number of these latter structures, including a 2,610-ft. part double-deck bridge over the Monongahela river, a 2,600-ft. single-deck bridge over the Youghiogheny river, and several long viaducts over 175 ft. in height, incorporate special features of design and construction and are, therefore, of unusual interest.

Plan and Location of New Line

The Connellsville extension, which was authorized by the Interstate Commerce Commission in June, 1928, extends in a southeasterly direction from a connection with the West Side Belt line of the Pittsburgh & West Virginia at Snowden, Pa., about 11 miles southeast of Pittsburgh, to Connellsville, a distance of 38 miles. From Snowden, the line strikes out over rough, rugged country and at a point about 16½ miles from Snowden, crosses the Monongahela river to Bellevernon, Pa. From here it extends almost due east for about 9 miles to a crossing of the Youghiogheny river at Banning, Pa., beyond which it continues in a southeasterly direction to Connellsville.

In less than 30 days after the line was authorized, grading was begun, although work under the first large contract, including the first 17½ miles of the line, was not started until about six months later. At the present

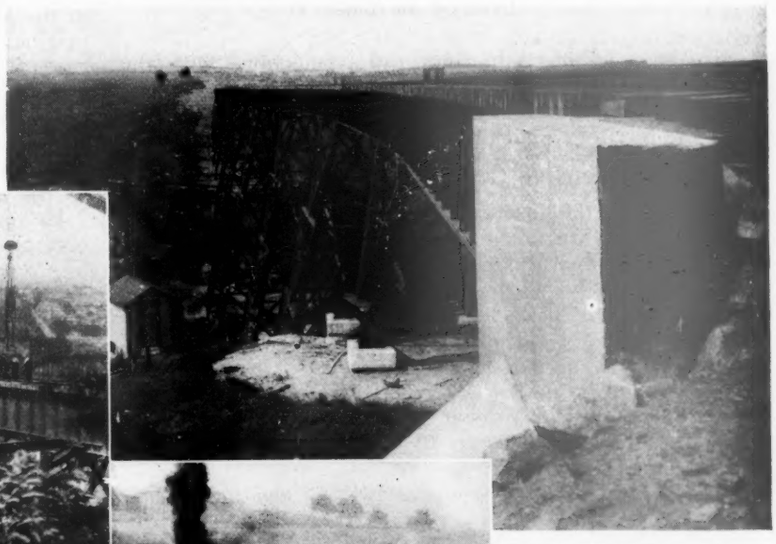
New Line of P. & W. Va.

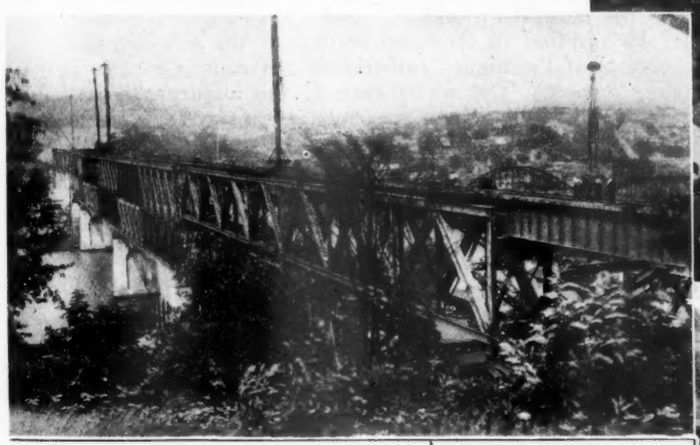
shovels, speeds work on 38-mile link
Bridge work of unusual interest

time this section, which includes the heaviest grading on the entire line, the bridge over the Monongahela river, and a 735-ft. tunnel, is completed, and work is progressing rapidly on the next 16 miles of the line to a point near Scottdale, Pa. This latter section includes fairly heavy grading, the 2,600-ft. bridge over the Youghiogheny river and one tunnel about 1,200 ft. long.

Work on the last five miles of the line to a connection with the Western Maryland at Connellsville has not yet been put under way, but because of the more favorable topography in this territory, this section of the line will require only a few months to construct when work is once started. At the present time, approximately 75 per cent of the work on the line as a whole has been completed, and it is expected that the entire line will be ready for operation late in the spring of 1931.

When completed, a new through route to the East will have been established via the W. & L. E. to Pittsburgh Junction, the P. & W. Va. for a distance of about 79 miles through the Pittsburgh district to Snowden, the new extension to Connellsville, and the Western Maryland to Baltimore. It is even possible that the roads included in this route will be combined under one management, as application for such a combination is now before the Interstate Commerce Commission.

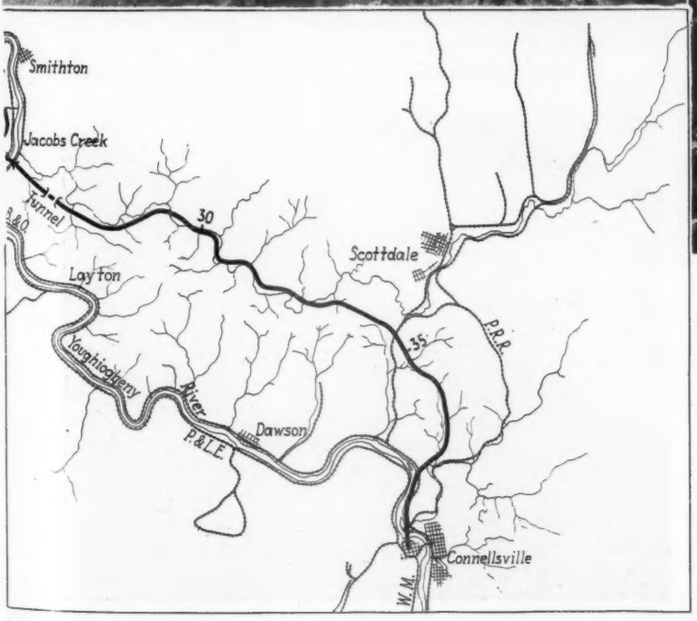




Above — The Pigeon Creek Viaduct, 1607 ft. Long and 190 ft. High

Left — The Monongahela River Bridge, One of the Three Large Bridges on the Line

Below — Forty Power Shovels Were Employed at One Time on the Grading



Map of the Connellsville Extension of the P. & W. Va., Showing Main Points of Interest

In addition to being a connecting link in a new through route, it is expected that the new line, passing through the highly developed industrial section of the Monongahela River valley, will eventually originate much business. Already, a six-mile branch line, to be known as the Donora Southern connection, is planned, which will extend to Baird, Pa., on the Monongahela river, connecting with the Donora Southern railway of the American Steel & Wire Co. The new line will

One of the Pier-Type Counterfort Abutments Used on the Line

also have several important rail connections with the view of tapping existing industrial plants and will, in all probability, stimulate development along a large part of the territory immediately adjoining it.

Extensive Grading Was Necessary

Owing to the absence of prominent water courses in the general direction of the new line, it was necessary to lay out the Connellsville extension as a high-line across country, rather than as a water-level route. Therefore, the line is essentially a series of cuts through the tops of hills and fills across sags, with steel viaducts spanning the deeper and wider valleys. From Snowden, at Elevation 885, the line rises and falls in an undulating grade for a distance of 11.8 miles, to a prominent summit at Elevation 1089, at the east end of the first tunnel.

From this point the line drops to Elevation 880 at the Monongahela River crossing, and then rises to Elevation 1059 at about M.P. 20.5. The line then descends to a level crossing of the Youghiogheny river at Elevation 935 and, at about M. P. 25.6, it begins to rise again to Elevation 1090 at about M. P. 34.1. From this point, which is near the end of the work under construction at the present time, the line will drop off to an elevation of about 909 at Connellsville.

In spite of the rough country encountered, a ruling grade of one per cent, compensated for curvature, has been obtained, and curvature has been held below 4 deg., except for several curves of 6 deg. To secure such favorable grades and alinement necessitated numerous heavy cuts and fills, the two tunnels and several high viaducts, two of which carry the line about 185 ft. above the stream level.

Grading Progress

Altogether, about 7,100,000 cu. yd. of grading will be necessary when the line is completed. Already, approximately 5,000,000 cu. yd. have been handled, 60 to 65 per cent of which was shale, slate, limestone and sandstone. About 3,100,000 cu. yd. of excavation was made in the first 17½ miles of the line, where several cuts from 80 ft. to 95 ft. deep were necessary, and one with a maximum depth of 100 ft. Fills in this section were unusually heavy, with a maximum height of 120 ft. in one case and heights between 80 ft. and 90 ft. in many other instances. The heaviest cut on the whole line is also on the first 17½ miles and involved the removal of about 285,000 cu. yd. of excavation, 60 per cent of which was rock, while the largest fill is on the section between the Monongahela and Youghiogheny rivers. This embankment, which is approximately 1,600 ft. long, required over 311,000 cu. yd. of fill.

Throughout the territory traversed by the new line, test borings and observation of the work thus far completed have shown that rock lies generally from 10 ft. to 20 ft. below the surface, the top layer of the rock being a soft, readily disintegrating shale. The standard roadbed section is 20 ft. wide at subgrade on fills and 24 ft. wide in cuts. The side slopes being used in cuts and fills vary with the conditions encountered, but in general, a 1½ to 1 slope has been found satisfactory in earth cuts, a ¾ to 1 slope satisfactory in rock, and a 1½ to 1 slope suitable for fills.

Combination cut and fill sections were impossible along many parts of the line because the natural ground of the hillsides would not support the weight of the fills. At several points where cut and fill sections were tried in the interest of economy, serious slides occurred, the original ground giving way under the load. In these cases it was necessary to move the line back into the hillside to secure a stable roadbed. At one point in particular where a serious slide occurred, a high fill is being made with granulated slag in an effort to provide an embankment sufficiently light in weight to be carried by the natural ground.

In addition to slides on certain of the side-hill fills, several of the higher full-section fills caused trouble in this respect. The worst case of this nature occurred in a 120-ft. fill, where the embankment gave way and completely covered the lower end of a 450-ft. concrete box culvert through the fill. Without drainage, the entire fill was threatened by water impounded within it, and the condition was remedied only after an 8-ft. drainage tunnel had been cut through stable ground and the slide to the culvert opening.

As Many as 40 Shovels Employed

One of the outstanding features of the work on the new line has been the extensive use made of heavy grading equipment and the speed with which the work has been carried out. Shortly after the contract was let for the first 17½ miles, 40 power shovels, with full complements of hauling equipment, were spread out over the line, undertaking the major grading operations.

One of the Many Deep Cuts on the First 17½ Miles, Showing the Rock Penetrated

With this equipment, which included Erie, Marion, Koehring, Osgood and Thew shovels, Browning and Orton cranes, Linn tractors, Athey wagons, 4-yd. narrow-gage and 20-yd. standard-gage Western dump cars, and, at times, more than 200 Sterling, Mack, International and Dodge motor trucks, as much as 500,000 cu. yd. of material has been moved in a month.

Most of the lighter materials taken out were hauled to fills or to waste banks in the motor trucks, while rock excavation was hauled in narrow- and standard-gage dump cars. The haul varied with each cut, but in some cases was as long as 7,000 ft.

Heavy blasting operations, using Keystone drillers and Atlas explosives, were necessary in most of the rock excavation, the blast holes being sunk as deep as 20 ft. in some cases. In the deeper cuts, excavation was made in a series of 15-ft. to 20-ft. cuts, five or six such cuts being necessary in some cases.

Practically all of the higher fills were made with dump-car equipment hauled by Porter dinkeys and unloaded on construction trestles. Several of the fills were so high that it was necessary to carry them up in two or more lifts. The lower fills, for the most part, were made with the trucks, Linn tractors and Athey wagons pulled by Caterpillar "Sixties."

Wherever sliding of fills was anticipated, and especially in connection with certain of the side-hill fills with poor supporting material beneath them, it has been the practice to blast benches in the rock near the toe of the slopes to key the fills in place. This precaution has, no doubt, been of great benefit, because, even in spite of it, several of the higher fills have given trouble.

Tunnel No. 1, Showing Construction Features, Which Are Also Being Embodied in Tunnel No. 2

In the grading work now under way between the Monongahela river and Scottdale, the amount of equipment being used has been reduced somewhat because of the less severe conditions encountered. However, practically the same methods of carrying out the work are in force as were employed on the first 17½ miles, and an average of about 250,000 cu. yd. of material is being moved each month. It is expected that all of the grading as far as Scottdale will be completed late this fall, with the work on the remainder of the line well under way by that time.

Use K-Type Trusses in River Bridges

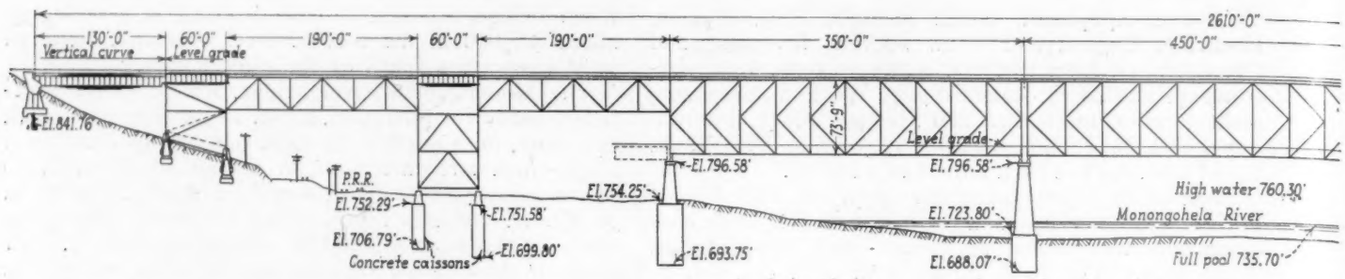
From the standpoint of permanent structures, the bridges on the new extension are as interesting as the grading, several new features of design and construction having been adopted to bring about the most economical results. Most prominent among these is the use of K-type trusses in the longer river spans, which, in the case of the three river spans of the Monongahela River bridge, are said to have resulted in a saving of about $25,000 in the cost of steel over that required in Warren truss spans of the same length.

The Monongahela River bridge, which is now practically ready for operation, so far as its upper deck and, therefore, the Connellsville extension, is concerned, is a single-track structure with an overall length of 2,610 ft., containing 17 spans of lengths ranging from 40 ft. to 450 ft. In this bridge there are three main truss spans, with lengths of 200 ft., 350 ft. and 450 ft. All three of these spans are designed to carry two tracks, one at the level of the top chords of the trusses and the other at the level of the lower chords, with separate approaches at each end for the two levels. The high-level track over the bridge, which is about 145 ft. above full pool level, will be used by the Connellsville line, while the low-level track will be used at a later date by the Monessen Southwestern, a subsidiary of the Pittsburgh Steel Company. This bridge, like all other bridges on the line, is designed for Cooper's E-65 Loading. The K-type trusses used in the river spans were adopted after consideration of both modified Baltimore and Warren trusses. An outline of these trusses is shown in the accompanying sketch of the bridge.

Advantages Claimed for K-Truss

While the K-truss is not a new development in bridge design, it has been used previously in this country in only a few structures. Lacking precedent in view of this situation, a most careful study was made of the K-truss by the Pittsburgh & West Virginia, which proved to the satisfaction of the railway's engineers that it was not only practical for the river crossing, but highly economical in material. In fact, it is said that 800 tons of steel were saved by the adoption of the K-type truss for the river spans of the Monongahela River bridge. Another special feature of interest pointed out as a result of the railroad's investigation is that in the K-truss, since the panels are shorter than is generally possible in other types of trusses, shorter members can be used and more frequent changes made in the size of chord sections, if desired. It was also observed that secondary stresses in the K-type truss are smaller than in any of the other types of trusses in common use.

The three long spans were erected entirely with tall guy derricks mounted on the top chords and advanced as the erection progressed. The spans flanking the main 450-ft. span were erected on falsework in the river, while the main span, owing to requirements imposed by the federal government because of heavy river traffic, was erected by cantilevering the steel from each



Line Elevation of the Monongahela River Bridge the Three

end. The foundations for all of the river piers for this bridge were put down to rock by the pneumatic process, the caissons being constructed of reinforced concrete.

Two Other Long Bridges Necessary

In addition to the Monongahela River bridge, two other river bridges were required, both over the Youghiogheny river; one at about M. P. 26.3 and the other near the end of the line, in Connellsville. Work on the second of these has not yet been started, but the first crossing of the Youghiogheny is now well under way; the substructure has been completed and the steelwork is being erected.

The bridge at the first crossing will be 2,600 ft. long, with 13 spans, ranging from 50 ft. to 370 ft. in length. The longest span, like the three main river spans of the Monongahela River bridge, will have K-type trusses, while the two other truss spans in the bridge, which will be 230 ft. long and flank the main span, will be made up with Warren trusses. All of the truss spans in the bridge will be of the deck type and all of the approach spans will be of deck plate girders supported on steel towers.

The river piers, of which there are four, rising to a height of about 100 ft. above the water level, are of concrete masonry carried down to rock. The two outside piers were in the dry during construction and, therefore, their footings were put down by open excavation. The west pier of the two water piers was put down in an open cofferdam, while the east pier was sunk in an open caisson.

Detailed plans have not yet been completed for the second bridge over the Youghiogheny, but it is understood that this bridge will be about 1,522 ft. in length, consisting of deck girder spans with one deck truss span over the tracks of the Baltimore & Ohio and one through truss over the channel of the Youghiogheny river, 250 ft. in length.

Several Long Viaducts Required

In addition to the river bridges, there will be many other major steel structures on the new line, 14 of these having been completed already on the first 17½ miles. These structures include several girder and truss bridges over highways, and steel viaducts ranging in length from 350 ft. to 1,700 ft. The three longest of these structures include one of 750 ft. over Peters creek on M. P. 1; one 1,607 ft. long over Pigeon creek on M. P. 9; and the longest one of 1,701 ft., which carries the line over Mingo creek at about M. P. 6. Base of rail on the two latter viaducts is approximately 195 ft. above stream elevation.

All of the viaducts are similar in construction, employing structural steel towers on concrete pedestals and deck girder spans. In the Mingo Creek viaduct there are 27 spans, with tower spans of 30 ft. and 55 ft. and with practically all intermediate spans 60 ft. or 118 ft. 4 in. in length.

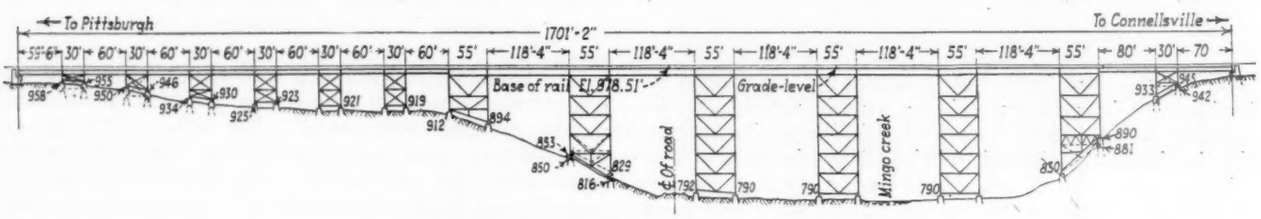
The most unusual feature of the viaducts, which is common to all, even the highest, is the tower construction, which employs full rolled sections wherever possible, thereby effecting a saving in material and reducing the fabrication costs. Typical of this practice is the use of rolled "H" sections for all of the tower posts. This gives the structures, particularly the higher ones, an unusually slender appearance. Aside from the initial saving effected through this type of construction, it is felt that the smooth sections employed will be less subject to corrosion and can be painted much more readily than built-up sections.

The viaducts and certain of the bridges have pier-type counterfort abutments of reinforced concrete, the bridge seats of which are enclosed on each side by 12-in. walls constructed monolithic with the backwall and continued to the rear of it as ear-like projections of sufficient length to keep the end slope of the embankment from encroaching on the bridge seat. It is estimated that the use of this type of abutment effected a saving of 40 per cent in concrete as compared with mass type abutments.

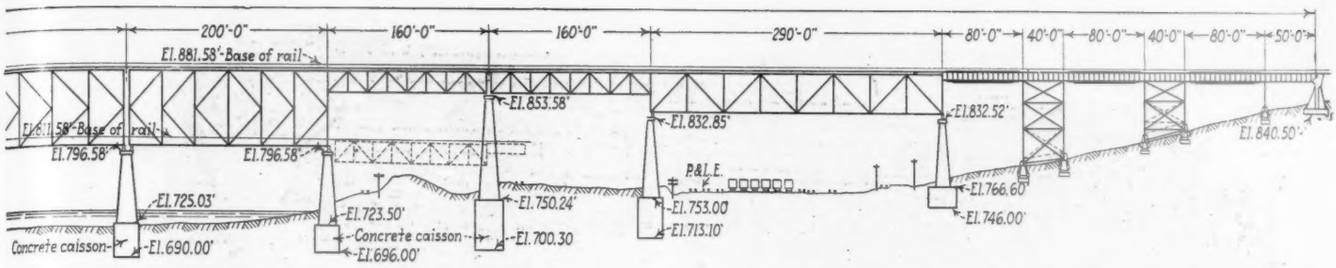
Most of the abutments were constructed with spread footings. The most unusual footing constructed was at a point where the abutment was to come directly over an old worked-out mine. Here, a hollow box of concrete construction was carried down a distance of 40 ft. to the floor of the old mine.

Two Tunnels Add to Work

Two tunnels were necessary on the line in order to avoid prohibitive grades and greatly increased mileage; the first of these, called tunnel No. 1, being 735 ft. long and located on Mile 11, while the other, called



Sketch Elevation of Mingo Creek Viaduct

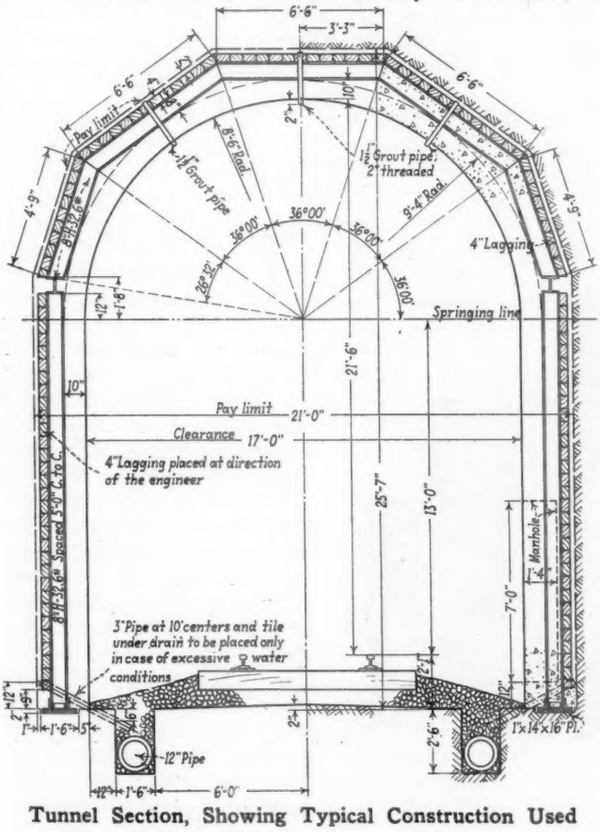


Showing K-Type Truss Construction Used in River Spans

tunnel No. 2, is 1,200 ft. long and is located on Mile 26. Tunnel No. 1 is completed, but work on Tunnel 2 is only about 75 per cent finished. Both tunnels are single-track bores of the same section, lined with concrete, with a crown height of 21½ ft. above top of rail and a clear width of 17 ft. between vertical side walls. The principal difference in the tunnels is that tunnel No. 1 has a concrete floor, while tunnel No. 2 will be provided with a ballasted roadbed directly on the tunnel floor. In both cases, steel timbering of 8-in., 32.6-lb. H-sections has been installed on 5-ft. centers or closer, as was found necessary, and backed with 4-in. lagging.

In constructing tunnel No. 1, which was driven through soft shale and slate chiefly, the work had to be carried forward with special care to prevent cave-ins. Two 4-ft. by 4-ft. pilot bores were first advanced at the spring lines, 10 ft. at a time, to permit setting of the wall plates, and the heading was then carried forward about 5 ft. at a time. About 14,200 cu. yd. of material was removed from the tunnel, most of which was handled by a ¾-yd. air-operated Erie shovel, loading 5-yd. narrow-gage dump cars.

Lining of the tunnel was done in sections, employing forms which could be advanced readily as the concrete



Tunnel Section, Showing Typical Construction Used

hardened. The concrete was delivered within the tunnel in 2-yd. narrow-gage cars operated on a temporary trestle. Placing of the concrete was all done by the workmen with shovels.

Tunnel No. 2 is now being advanced from its two ends, using methods similar to those employed in tunnel No. 1. Work in this tunnel, however has been found somewhat more difficult than in Tunnel 1, owing to the faulted character of the rock penetrated and the steep dip of the rock strata.

Concrete Prepared at Central Plants

All of the concrete used in the structures on the new line, with the exception of that used in certain of the river bridge piers, is being prepared in four central mixing plants, and is being transported out on the line in high-speed motor trucks. These central plants, which are located at Monongahela City, Bellevernon, Banning and Scottdale, are equipped with Blaw-Knox batchers, and measuring devices for controlling the water used and for weighing all of the aggregates. As suggested by this equipment, all concrete being used is prepared according to the water-cement ratio; 3,000-lb. concrete being used for bridge seats and copings, 2,500-lb. concrete for all neatwork above footings, and 2,000-lb. concrete for footings.

Open-body dump trucks of various types are being used for hauling the concrete, the usual load being about 3 cu. yd. Owing to the length of haul, which, in some cases has been as great as 12 miles, some difficulty was encountered at first in unloading the concrete from the trucks into the forms. This was overcome by adding 3 per cent of Celite to the mix. Seven and 28-day tests of the concrete throughout the work have shown it to be of unusually high quality.

All of the work on the Connellsville extension has been planned and is being carried out under the direction of H. H. Temple, chief engineer of the Pittsburgh & West Virginia, assisted by F. L. Riddle, construction engineer, A. N. Doud, bridge engineer, and W. C. Kline, assistant construction engineer, who has charge of field operations. All of the grading and masonry work is being done under a general contract by the Vang Construction Company, Pittsburgh, while the bridge and viaduct work is divided between the American Bridge Company and the McClintic-Marshall Company.

DURING THE LAST 10 YEARS over a million trees have been planted on territory adjacent to the Great Western (Great Britain) system, unsuitable for agricultural purposes or denuded of trees during the war. Altogether some 27,000 acres of land have been planted. Most of this is in Wales and in such famous districts as the Snowden Range, Cader Idris, near Dolgelley, Plynlimmon, on the Cambrian Coast at Devils Bridge near Aberystwyth, Tintern, Exmoor, Quantocks and the Forest of Dean. The nearest place to London on the G.W.R. which has thus become a State forest is Mortimer near Reading where some 2,188 acres of trees have been planted.

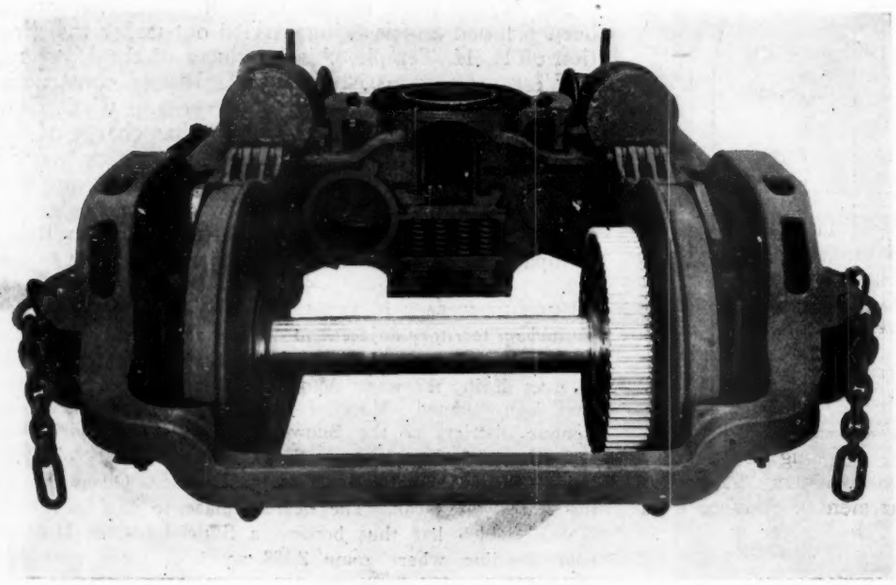
One of the Locomotives Assigned to the Michigan Central

Oil-Electric-Battery Locomotives for the New York Central

Power taken from three sources makes locomotives suitable for all requirements of switching in metropolitan district

By F. H. Brehob

Transportation Engineering Department, General Electric Company, Erie, Pa.



A Truck Without Motors

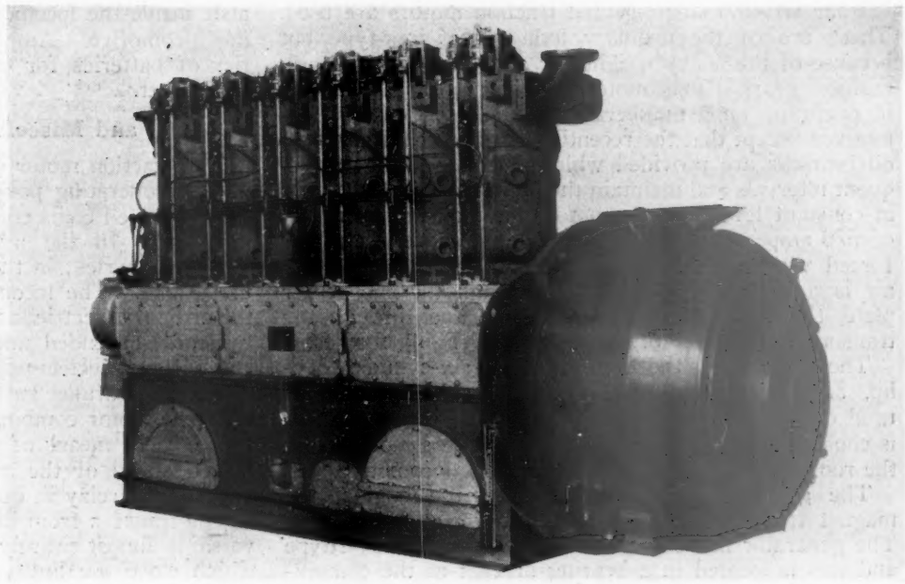
THE New York Central has purchased 41 storage battery oil-electric locomotives for switching service, 35 to be used in New York City, 4 to be assigned to the Michigan Central for use in Chicago and 2 for passenger switching in the La Salle street station in Chicago. One additional locomotive, also for use in the La Salle street station, is being supplied to the Chicago, Rock Island & Pacific. These locomotives will be alike except that the first seven units to be delivered (those for use in Chicago) will not have third rail collectors, although provision is made to install them later. The term "three-power" has been applied to this new form of motive power because pow-

er may be obtained from a third rail, from engine and battery combined, or from the battery alone.

While these are a relatively new type of locomotive, they were purchased following the successful operation of the original three-power locomotive, No. 1525, in switching service for more than two years in the New York Central Seventy-second street yards in New York City. The storage battery is automatically charged from the engine generator set when the load demand of the locomotive is zero, or less than full engine power. In turn, the battery and engine together furnish power to four traction motors when the load demand is greater than full engine power.

The total weight of the locomotive in working order is 255,000 lb., all on drivers, or 63,750 lb. per driving axle.

The locomotive has a capacity, when the motors are forced ventilated, of 33,800 lb. for one hour and 24,600 lb. continuous, with a maximum tractive force for starting of 64,000 lb.



The 300-Horsepower Oil Engine and Generator

Principal Dimensions

Height over-all	14 ft.	10 in.
Width over-all	10 ft.	1 in.
Length inside of knuckles	47 ft.	0 in.
Length of cab	40 ft.	0 in.
Total wheel-base	34 ft.	1 in.
Rigid wheel-base	8 ft.	3 in.
Diameter of wheels		44 in.
Track gage	4 ft.	8½ in.
Minimum radius of curvature	100 ft.	

Mechanical Structure

The locomotive mechanical structure consists of a box type cab built on a cast steel underframe with a running gear consisting of two two-axle swivel trucks. The truck frames are of integral cast steel construction, equalized by means of the conventional drop type equalizers with inverted elliptic springs. In addition, quiver springs are provided on top of the journal boxes to improve riding characteristics. The pedestal construction is such that by dropping the tie-bar the pedestal shoes may be dropped permitting the journal boxes to be pulled outward, which, in turn, permits removing wheels and axles, allowing the motors to be kept in place underneath the locomotive. The motor is held in place when the wheels and axle are removed by means of rod supports attached to the axle cap brackets on the motor frame and lugs provided on the cab underframe.

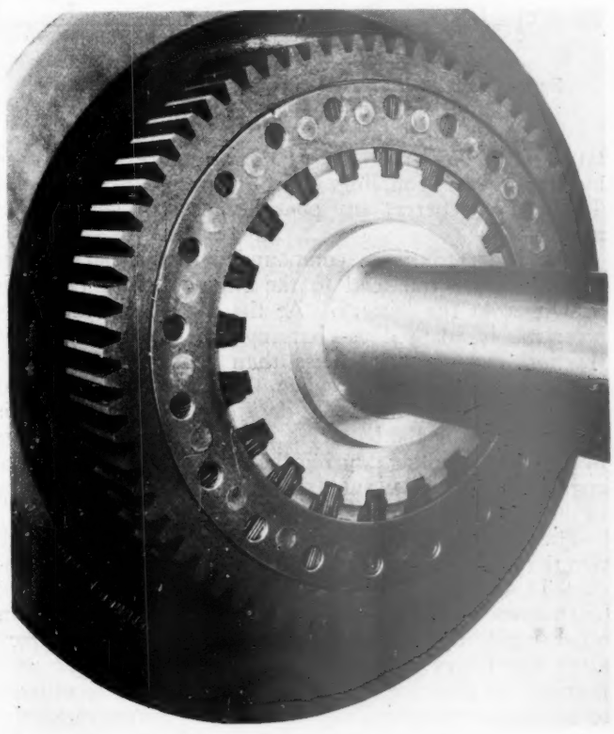
Welding, rather than riveting, is used to a large extent in the cab construction—the floor angles are welded to the underframe, the floor plate is welded to the underframe, and in a great many places the cab sheets are welded to the stiffeners and are welded at the seams.

The cab is arranged with an operating compartment at each end. Immediately back of each operating compartment are two battery compartments separated by an aisle. The battery is entirely enclosed except for outside ventilation to prevent fumes escaping inside the locomotive.

In the center of the cab is the engine compartment which contains the engine-generator set and its associated apparatus; the control equipment is mounted along one side. The outside of the cab on the control side is equipped with removable covers for access to the connections of the contactors, reverser and other control equipment; these pieces of apparatus are also accessible for inspection from inside the cab.

Air Brake and Power Equipment

The locomotive is equipped with No. 14, EL air brake equipment using two pedestal brake valves, two distributing valves and two brake cylinders mounted on each truck. A high-power hand brake mounted inside one of the operating cabs furnishes braking on one truck. In addition, complete air signal equipment is provided.

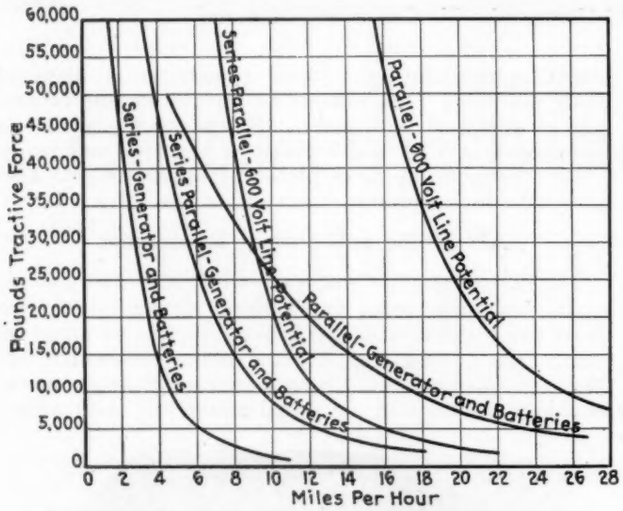


The Motor Pinions Mesh with Cushion Type Gears

Four GE-286 single-geared traction motors are used. These are of the ordinary axle suspension type but because of the heavy weight per axle are provided with cushion gears. This motor is the same as those now in operation on a number of New York Central locomotives except that the recently developed constant level oil bearings are provided which permit oiling at infrequent intervals and maintain the oil in the waste chamber at constant level. These motors have an hourly rating of 570 amperes and 450 amperes continuously, and are forced ventilated by blowers located in the cab. The air is delivered to the motors through the cab center plate, through the truck center plate and through the transom into the motors by means of sliding flanges.

The oil engine is the Ingersoll-Rand six-cylinder, 300-hp. 550-r.p.m. solid-injection engine which has been used on a large number of oil-electric locomotives. It is cooled by two forced ventilated radiators mounted on the roof, one located at each end of the locomotive.

The generator is overhung from the engine, the magnet frame being bolted to a bracket on the engine. The generator has one bearing of the anti-friction type and this is located in a bearing bracket at the commutator end. The other end of the armature is supported by the driving coupling which is designed to provide flexibility to correct any possible error of shaft alinement.



Speed-Tractive Force Curves for Various Operating Conditions

The generator is so compounded that it permits the application of full load to the engine before power is drawn from the battery. At the same time the characteristic is adapted to charging the battery when the traction motor load is less than the capacity of the engine-generator set or when the traction motor load is cut off during coasting or stopping. Provision is made for giving the battery a periodic equalizing charge by raising the voltage during the time of operation. The engine is started by supplying power from the battery to the generator acting as a motor.

The battery is arranged in four compartments with two tiers in each compartment and is of the Exide Ironclad TL-27 type with a total of 240 cells and is rated 650 ampere-hours. The same construction is used as on other Exide batteries of similar capacity now in operation for heavy traction duty, but with different proportions so that the space in the locomotive is utilized to better advantage. Drop type hinged covers make the battery accessible for inspection and flushing from the aisle inside the locomotive and also from the outside of the locomotive. Ample space is provided above each tier of batteries for convenient manipulation of filling equipment.

Control and Miscellaneous Electrical Equipment

The traction motor control is of the three-speed type with an operating position in each end of the cab. In the low-speed connection, all four motors are connected in series. In the intermediate speed there are two motors in series; in the high speed all four motors are in parallel. The locomotive is accelerated exactly like the ordinary electric locomotive by means of accelerating resistors suspended underneath the platform which are cut out by electric-pneumatically operated contactors.

A series-parallel switch is used to establish the three different motor combinations. The motor equipment is protected by means of a high-speed circuit breaker connected ahead of the motor circuit and in addition by an overload relay in each of the four motor circuits.

The transfer from internal to external power, or vice versa, is almost entirely automatic. Relays are provided which close the line contactor to use external power when external power is available and automatically close the contactor for internal power when external power is not available. When the locomotive is operated on external power, and runs beyond third rail territory or if third rail power fails, internal power from the battery, or from the engine and battery if the engine happens to be running, is immediately applied without any manipulation on the part of the operator. If, however, the locomotive is running on internal power and it enters a third rail zone, the locomotive continues to operate on internal power until the operator throws the controller to the off position and notches out again, thus obtaining external power. Indicating lights are provided at each operating position to show whether internal power or external power is available.

The starting and the stopping of the engine is controlled from the operation positions by means of push-button switches. In addition, the engineman has control of the radiator blowers and the traction motor blowers. Full speed or low speed of blowers is provided, selected at the discrimination of the engineman, for both the radiator blowers and traction motor blowers. A water temperature indicator at each operation position serves as a guide to the enginemen in determining the proper speed for the radiator blowers.

There are two ampere-hour meters in the engine compartment, one of which is the differential instrument to indicate the state of the battery charge and the other to indicate the total ampere-hours discharged by the battery and the total ampere-hours of charge put into the battery. Both of these instruments are operated from the same shunt which also operates a battery ammeter at each operating position. This ammeter indicates to the engineman the rate at which the battery is charging or discharging.

A 600-volt two-stage air compressor suspended from the underframe supplies air for the brakes and control. The air compressor has a displacement of 120 cu. ft. per minute and permits operation on 140 lb. pressure for use with 110 lb. brake pipe pressure for passenger car switching.

Power for operating the control, cab lights and headlights is obtained from a 32-volt motor-generator set, regulated to hold constant voltage by means of a carbon pile regulator connected in the generator field. This set, located in the engine room, receives its power from the generator and battery.

The air compressor and traction motor blowers are

automatically transferred from one source of power to the other whenever the traction motor power is transferred.

These locomotives involve a somewhat novel application of immersion heaters. Two four-kilowatt units, installed in each operating cab, can be used to heat the cabs when the locomotive is operating on external power, and, by means of a throw-over switch, can be operated by connecting power to coupler sockets located underneath the platform during freezing weather to protect the cab radiators and engine circulating system when the locomotive is not in operation. Ordinarily the cast iron radiators in each operating cab receive their hot water from the engine circulating system. The immersion heaters thus permit using the same radiators during either condition of operation.

The locomotive presented a difficult problem in design because of the large amount of equipment to be installed and the necessity for such an arrangement as to make it accessible for inspection and maintenance. Furthermore, due to the space required for all the internal power equipment, as well as the external power control equipment, the various parts had to be carefully designed for minimum weight to keep the locomotive within the desired weight limit. At the same time, this locomotive had to be arranged for 100-ft. minimum radius curvature, which is unusual considering the size and weight, and necessitated a very compact design.

The assistance rendered by the engineering department of the New York Central and the experience gained from the operation of locomotive No. 1525 has been most helpful in the design of these locomotives. Even though they represent a relatively new form of motive power, there is every reason to believe they will give uninterrupted service over long periods.

Among the desirable characteristics which this locomotive possesses for switching or intermittent service, are the following:

The operation of the engine-generator in multiple with the battery allows the engine to run at constant speed and to perform useful work all the time it is running.

The large amount of power available in the battery for limited periods allows these locomotives to accelerate their loads quickly, thus speeding up switching and providing an abundance of power for "kicking" cars.

The control is simple; no auxiliary generator is required, the operation being essentially that of the straight electric locomotive.

The combination of the engine generator and battery allows the locomotive to be operated on battery alone when desired. Furthermore, the locomotive can be maintained in 24 hour service daily without losing time for battery charging. There are places in metropolitan areas where locomotives must enter buildings, warehouses, or operate through tunnels where operation on the battery alone overcomes any possible objections to fumes from the engine.

TWO RAIL AND WATER TERMINAL STRUCTURES of the Canadian National were destroyed by fire at Fort William, Ont., and Vancouver, B. C., on August 3 and August 10, respectively, with a total estimated damage of $2,000,000. A freight warehouse on Mission Basin at Fort William burned, along with binder twine stored there and 23 cars of news print paper standing alongside, representing a loss of about $750,000. The interior of the pier at Burrard inlet, Vancouver, was destroyed along with a considerable quantity of freight awaiting shipment by water, with a loss estimated by government officials to be about $1,250,000.

Security Owners Answer Couzens on Valuation

THE National Association of Owners of Railroad and Public Utility Securities on August 11 replied to the request of Senator Couzens, chairman of the Senate Committee on Interstate Commerce, for its opinion on the Howell Bill to change the basis of railroad valuation for rate-making purposes.

Unqualified disapproval was expressed for the investors by Milton W. Harrison, head of their organization. He said, in the course of his reply, that the Howell bill and similar legislation prepared the way inevitably for government ownership, or something so closely resembling it that there was little practical difference. Mr. Harrison said, in part:

In a letter dated June 7, 1930, you invite a statement of views in regard to S. 4005 senate bill, relating to the establishment by the Interstate Commerce Commission of rate bases for railroads engaged in interstate commerce, and to the disposition of net railway operating income by any such railroad above 6 per cent of its rate base. You also request consideration of the Commission's letter to you discussing C. 4005 and proposing a substitute for so much thereof as relates to the use of recaptured earnings.

It is apparent that the pending bill is an attempt to salvage and rehabiltate economic theories concerning railroad valuation almost universally condemned by those whose primary responsibility is the preservation of the welfare and the rights of the railroads. It is evident that the measure is an undertaking to avoid the effect of the *St. Louis & O'Fallon Case*, and to reestablish economic theories therein discountenanced by the Supreme Court of the United States because they run counter to the constitutional law of the land. It is equally plain but that for the inclusion of an adroit provision which might possibly protect it from attack as confiscatory, but which could afford no actual protection to the railroads, the proposed measure, if enacted, and any legislation embodying its principles, would be held unconstitutional.

Section 15a of the Interstate Commerce Act provides that to a specified extent each railroad shall impound in a reserve fund one half of the excess of its net railway operating income over six per cent of the value of its common-carrier property, and shall pay the remaining one half of the excess over six per cent to the Interestate Commerce Commission for a general railroad contingent fund. The value of the railway property is to be determined by the Interstate Commerce Commission, which is directed to use the results of its investigation under section 19a, the general provision for valuation, so far as they are available, and to "give due consideration to all the elements of value recognized by the law of the land for rate-making purposes."

Pointing out that the Supreme Court had set aside the Commission's finding in the O'Fallon Case concerning value on the ground that as to the great body of the railway property, namely, that part which had been installed prior to June 30, 1914, the Commission had failed to give consideration to the higher price levels prevailing during the recapture years, the statement continued:

In another particular the Commission's letters suggest a possible way of avoiding a finding of confiscation of property. It is suggested that the percentage rate of return might be made to vary from time to time to compensate for changing price levels. It is said that with increasing prices and a depreciating dollar the rate of return could be correspondingly increased, and that with falling prices and an appreciating dollar the reverse course could be pursued.

This would be a highly artificial and undependable departure from the natural procedure. It is a proposition involving an abandonment of long established customs of arriving at a fair return on any property, public or private. It would be lacking in the commonly accepted and understood, and easily applied, standards of value and fair return.

A rate base reflecting cost of reproduction at current prices is the most practical way to give reflection to the changing dollar needs of the carrier. In times of high prices the carrier

would be entitled to higher tariff rates; in times of low prices, it must be satisfied with lower tariff rates. A rate base changing with the value of the dollar makes provision for this, without the necessity of resorting to the artificial method of increasing or reducing the percentage rate of return on a rate base which would not vary to reflect changing costs.

The suggestion in the Commission's letter is an indirect and unintentional concession of the fundamental soundness of the contentions of those who insist that the rate base should primarily reflect current reproduction costs.

Measure Points Toward Government Ownership

Throughout the pending measure there are included provisions which whether designedly or not, would work toward government ownership of the railroad properties with which they deal.

Under the existing law the carrier retains one-half of the excess of its net railway operating income over six per cent, and after accumulating the amount so realized up to five per cent of the value of its property may use such moneys for any lawful purpose. S. 4005, subdivision (6), directs that the one-half of the excess earnings which are not recaptured by the government, shall, after a sum equal to five per cent of the rate base has been accumulated, be used to liquidate fixed obligations, either in conformity with the terms thereof or by the purchase of the carrier's securities in the open market.

These two provisions for the use of earnings exceeding the established percentage would automatically and artificially stimulate the growth of the prosperous carriers. They would thus grow, and as they grew their excess earnings would become greater, since their fixed charges would be progressively reduced and since but four per cent is to be paid upon the so-called public investment of the one-half of the excess earnings retained by the carrier as trustee for the United States. Greatness would thus feed upon itself, success would beget further success. Government ownership would loom as the inevitable consequence.

Car-Hire Rules Are Ordered Changed

WASHINGTON, D. C.

BECAUSE the railways failed to comply with the findings of the Interstate Commerce Commission included in its report of January 7 following its investigation of the rules for car-hire settlement, the commission has issued a supplemental report accompanied by a specific order putting into effect its findings as to modifications of the rules as of October 1. The report made specific findings and stated that "no order will be entered at this time, but carriers will be expected to modify their rules and practices to conform with our conclusions herein. If this is not done within a reasonable period, the matter may be brought to our attention for appropriate action." The investigation was instituted at the request of the short line railroads and many of the findings were in accordance with their requests. In the supplemental report, dated July 15 and made public on August 13, Chairman McManamy says:

"The general committee, transportation division, of the American Railway Association has directed our attention to circular dated June 21, 1930, which that association has issued to its members, which contains the following paragraphs:

The report of the Commission in Docket 17801, issued January 7, 1930, was in the form of FINDINGS, which does not have the same status as an ORDER. Railroads are not legally required to comply with FINDINGS in this case.

It is, therefore, the recommendation of the General Committee, Transportation Division, that members of the American Railway Association, subscribers to the car service and per diem agreement, refrain from putting into effect the findings of the Interstate Commerce Commission in this case, except that nonsubscriber railroads now settling on the so-called Birmingham Southern or modified demurrage basis may properly be placed on a per diem basis.

"Our reasons for entering no order in this proceeding at the time the report was served were, as indicated in the report, to permit the carriers in an appropriate way to modify their rules and practices to conform with our findings provided such modifications were made within a reasonable period. Such modifications have not been made, and the general committee, transportation division, American Railway Association, now recommends to subscriber members that they refrain from putting into effect our findings, except that nonsubscribers now settling on the so-called Birmingham Southern basis may properly be placed on a per diem basis.

"To follow the recommendation and suggestions of the general committee, subscriber lines would accept the said findings as abrogating certain of our findings and orders issued in former proceedings, which were reopened and consolidated with this proceeding, while at the same time rejecting the substitute measures found reasonable by us, because such substitute measures are but findings. In other words, they are apparently willing to accept such of our findings as may prove satisfactory to them as abrogating our former findings, some of which are made effective by outstanding orders, but are not willing to accept our findings, which substitute a different basis of car-hire settlement for those to be abrogated, for future application. An appropriate order will be entered to give effect to all of our findings.

"Since our findings and order herein will apply to the several cases reopened and consolidated herewith no orders in the individual cases are necessary, except to vacate our outstanding orders in those cases in so far as such orders may be in conflict with our order herein."

The order directs the railroads to establish, on or before October 1, 1930, and thereafter to maintain and observe, rules with respect to car-hire settlements which shall provide:

(1) That the same daily car rental shall be paid to common-carrier nonsubscribers as respondents contemporaneously pay to subscribers to the per diem rules agreement of the American Railway Association for the use of general-service freight cars.

(2) That similar reclaim allowances shall be made to nonsubscribers as to subscribers of the per diem rules agreement, in connection with cars handled in terminal switching service, as the latter term is defined by the switching reclaim rules of the American Railway Association.

(3) That short-line railroads which are less than 100 miles in length, and which return railroad-owned equipment to the road from which received, shall not be required to report per diem accruals to numerous car owners throughout the country, but shall be attached to their connecting carriers for purpose of car-hire settlement.

(4) That common-carrier railroads which interchange freight cars with more than one subscriber railroad, and which deliver to one or more subscribing carriers, freight cars which are received from another such carrier, and railroads 100 miles or more in length, regardless of the number of railroads with which they connect, shall make car-hire settlements direct with car owners in accordance with the per diem rules.

(5) That common-carrier railroads outside switching districts, other than those referred to in paragraph 4 hereof, shall pay per diem to connecting carriers on railroad-owned freight cars after deducting an average of two days free time per loaded freight car interchanged, settlements to be made at the end of each calendar month, except that no car hire need be paid on cars received for return loading with coal from coal mines which are customarily dependent upon connecting carriers for car supply.

It is further ordered, That this order shall continue in effect until the further order of the commission.

And it is further ordered, That all unexpired orders, or parts of unexpired orders, heretofore entered in the proceedings consolidated with and made a part of this proceeding, be, and they are hereby, vacated and set aside in so far as in conflict with our order herein.

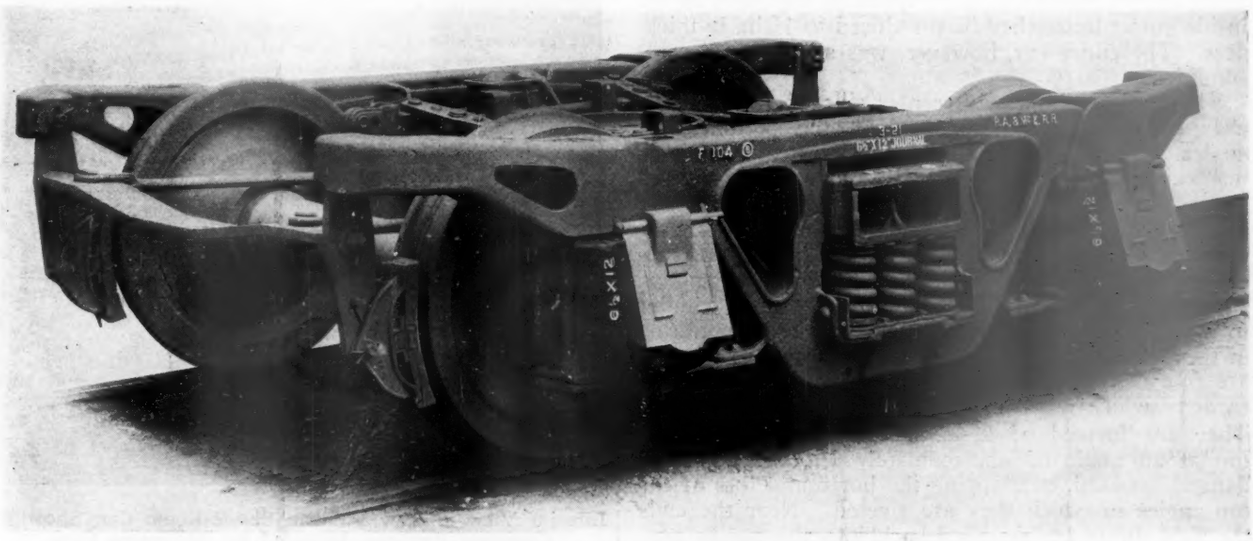
Experimental High-Capacity Coal Car with Four-Wheel Trucks, Built by the Pressed Steel Car Company in 1921

Performance of 100-Ton Car With Four-Wheel Trucks

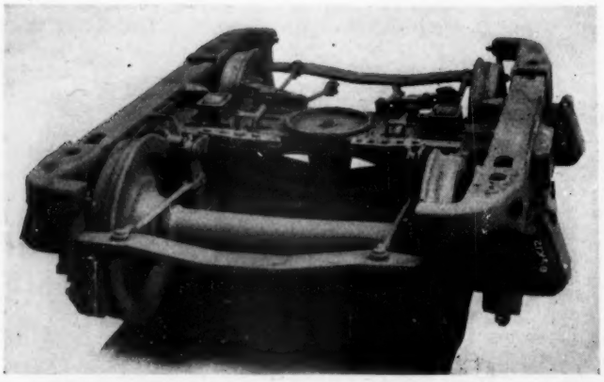
Experimental car, built by Pressed Steel in 1921, is in good condition after eight years of service

DURING 1921 the Pressed Steel Car Company built for experimental purposes a 100-ton gondola car which was equipped with four-wheel trucks. The car was 43 ft. 3 in. long inside and the body was 7 ft. 5½ in. deep from floor to top of the sides. It had a cubical capacity of 3,212 cu. ft. and a stencil capacity of 182,000 lb. The trucks had a wheel base of 5 ft. 10 in. and were built up of cast steel side frames and bolsters. The journals were 6½ in. by 12 in. and the wheels were of rolled steel fitted with clasp brakes operated by the Westinghouse empty and load air brake equipment. With a tare weight of 59,000 lb., the car has a ratio of paying weight to gross weight of 75½ per cent based on the stencil capacity and of 76½ per cent, based on the present A.R.A. load limit of 251,000 lb. for the 6½-in. by 12-in axles.

This car was placed in service on the Virginian in April, 1922, where it remained continuously in service,



The Four-Wheel Truck, Equipped with Clasp Brakes



A Top View of the Truck

except during the period October 8, 1923, to December 14, 1923, until it was returned to the McKees Rocks (Pa.) plant of the builders in December, 1929. During this time the car made 92,851 miles, an average of 11,606 miles per year, or 950 miles per month. The average load during this period ranged from 95 to 96 tons.

At the time the car was placed in service some question was raised as to the possibility of using a four-wheel truck on a car of such large capacity because of possible excessive flange wear and brake shoe wear. During nearly eight years of service on the Virginian three pairs of wheels were removed due to flange wear. These wheels were reapplied after being turned. This performance is said to compare favorably with the wheel replacements necessary on the 120-ton cars equipped with six-wheel trucks, many of which are in service on that road.

All wheel treads were in good condition at the time the car was removed from service and showed very little flowing of the metal.

In addition to the condition of the wheels, a general examination to determine the condition of the car as a whole was also made at the plant of the builder. The four body side bearings were found riding hard on the rollers of the truck side bearings and also showed some crushing at the points of contact with the rollers. The floor sheets, which were originally of ¼-in. plate, have been reduced considerably by corrosion, the thickness at the drain holes at the time of the examination being approximately ⅛ in. Similarly, the edges of the inside gusset braces had been reduced to ⅛ in. in thickness. The entire car, however, was still in serviceable condition.

The cars are built with center sills of 12-in., 35-lb. channels which are reinforced at the bottom with angles. Each body bolster is a single steel casting 30 in. deep located inside the body and securely riveted to the center sills, floor plates and side sheets. There are three cross-bearers in the underframe between the bolsters which were of pressed steel 12 in. deep, substantially reinforced at the top and the bottom.

The construction of the sides of the car is similar to that which has since been quite generally employed in the design of high capacity hopper cars. The sides are free from outside stakes which increases the cubic capacity which may be secured within a given height. They are formed of ¼-in. plate sloped in near the top at an angle of approximately 15 deg. and then flanged outward, overlapping the horizontal legs of the top angles to which they are riveted. Near the ends the side sheets are dropped back into the car to provide space for the ladders and grab irons inside the clearance limits and to afford protection to the ladders in the car dumpers. The sides are braced on the inside by eleven ¼-in. gussets on each side extending from the floor to the top of the side and each tied together by two pressed-steel cross-ties extending from side to side near the top.

As the cars are designed for unloading in a car dumper, the floors are solid throughout.

The trucks are built up of Buckeye cast-steel side frames and cast-steel bolsters. The truck bolsters rest on a group of six double coil springs at each end set in a spring plank of pressed steel. The side bearings are of the Stucki roller type.

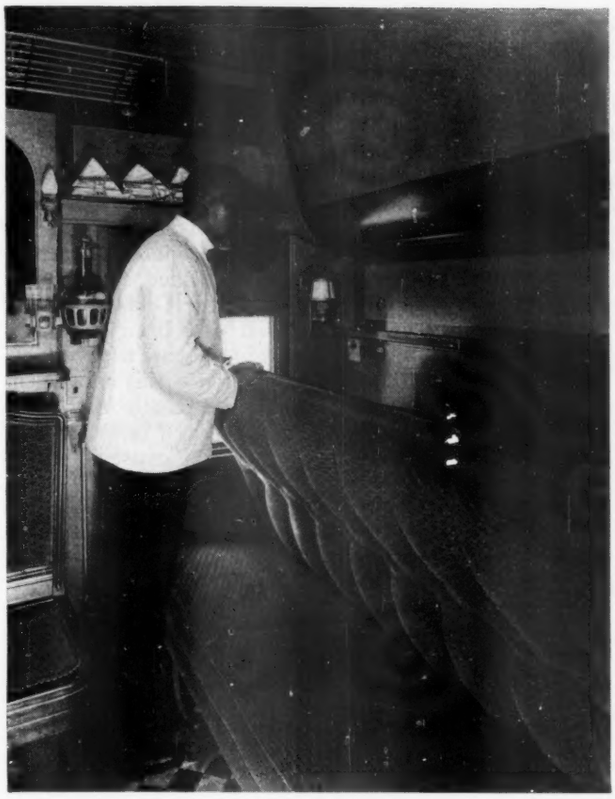
The trucks are equipped with cast-steel journal boxes and the inside brake beams are 5-in., 10-lb. I-beams.

Single-Room Cars for Day and Night Service

THE original Pullman single-room cars were used for overnight travel only on such runs as New York and Washington, Chicago and St. Louis, Minneapolis and Chicago, and San Francisco and Los Angeles, the beds being of the fixed type. The popularity of these cars was such, however, that a demand was created for a similar car suitable for trips of longer duration and involving both day and night travel.

A new design of Pullman single-room car was accordingly developed, divided into 13 single rooms, each 6 ft. 8 in. long and slightly over 5 ft. wide. Each room has

Interior View in New Pullman Single-Room Car, Showing Complete Facilities Provided for Maximum Convenience and Comfort of Passengers



The Couch Seat Back, Equipped with Additional Springs and a Mattress, Comes Down Over the Seat to Form the Lower Bed

a convertible couch bed, 2 ft. 8 in. wide, and also an upper berth. When the lower bed is made, the back comes down over the seat, as illustrated, the rear of the back containing additional springs and a mattress designed to provide maximum comfort for passengers while sleeping.

The upholstery is of mohair fabric with small figured patterns. The color schemes of these rooms are green and brown, and tan and brown. The floor is covered with a mottled black and cream tiling in 3-in. squares, and patterned carpet rugs add to the homelike interior. A thermos bottle assures cold water at all times.

The wash-stand is a folding design which forms the back of the seat shown in the illustrations. Each room has individual toilet facilities. On the wall facing the couch is a drop dressing table which can be used as a desk. Exceptionally good ventilation is assured by means of a window, a ventilator exhaust fan and a blow fan. Another feature is the shoe box, from which the porter can take and replace foot wear without disturbing the passengers. Luggage can be placed under the couch and in overhead racks.

Individual thermostatic temperature control is provided. Electric lighting is unusually complete. There are reading and night lights at both ends of the couch and also in the upper berth. Lamps over the wash-stand and dressing table furnish all necessary illumination for making the toilet. Each room contains three mirrors. That on the inside of the door is full length, while half-length mirrors are above the dressing and wash-stands.

THE ILLINOIS CENTRAL reports that during the past 12 months there have been established along its lines 125 new industries in 82 communities. Mississippi led with 30 new industries in 30 communities, while Illinois, exclusive of Chicago, was second, with 21 new industries in 16 communities.

Freight Rates Reduced Because of Drought

WASHINGTON, D. C.

AT the request of President Hoover and under a special authorization issued by the Interstate Commerce Commission the railways acted promptly this week to establish special emergency rates, 50 per cent of the usual rates, to assist in relieving conditions caused by the prolonged drought over a large section of the country, for the movement of hay, feed and water into the districts in which drought exists and of livestock out of such districts to points where feed is available.

Although appreciation of this action was expressed at the White House and in other quarters, no official announcement was forthcoming of any plan for a similar reduction in the prices of hay and feed to be moved at the reduced rates. A plan was worked out by the roads, however, and was approved by the President, designed to confine the reductions, by the establishment of a permit system, to shipments approved by representatives of the Department of Agriculture and to keep them from applying on speculative shipments or for purposes other than relieving conditions caused by the drought.

Following President Hoover's request last week that the railways investigate the drought situation from a transportation point of view and after some of the railways had expressed a desire to publish reduced emergency freight rates for the transportation of livestock, feeds, and water, the Interstate Commerce Commission on August 9 issued a general order giving blanket authority to publish such rates on short notice without observing the usual rules governing the publication of tariffs, effective until October 31.

The President's request was conveyed to the railways through Alfred P. Thom, general counsel of the Association of Railway Executives, who was asked to say to the railways that the President hoped the roads would co-operate to the fullest extent in such measures as might be taken as a result of the survey of the situation being made by the Federal Farm Board and the Department of Agriculture. Assurances that the roads would co-operate were given the President by direct messages to the White House and also through Mr. Thom's office. Almost every year the commission authorizes the railways to make special reduced rates, generally half of the regular rates, for particular emergencies to move livestock out of a drought area to a district where feed is more plentiful, usually acting upon specific request of the railways. The commission has no authority to order such reductions but section 22 of the Interstate commerce act authorizes transportation free or at reduced rates in special emergencies, and the blanket order obviates the necessity for obtaining sixth section permission as to each tariff. The text of the commission's order follows:

It appearing, That a prolonged period of severe drought exists generally throughout the United States, and that immediate measures of relief are necessary in many sections to avoid loss of livestock and to prevent general suffering, and therefore a special case exists;

That some of the carriers subject to the interstate commerce act have expressed their desire to publish reduced freight rates for the transportation of livestock, feeds, and water to relieve these drought conditions;

It is therefore ordered, That all carriers subject to the interstate commerce act are hereby authorized under Section 22 (1) of the interstate commerce act to publish and charge reduced rates on livestock, feeds, and water, and upon such other

articles of traffic as may be found necessary in the premises, to and from stricken areas, and between points in such areas, by filing schedules, referring to this order, containing such reduced rates, without notice, and without observing the provisions of Section 4 (1) or Section 6 of the said act, and the provisions of Tariff Circular 20, inconsistent with the quick and economical publication, establishment, and maintenance of the emergency rates hereinabove provided;

It is further ordered, That such reduced rates be, and they hereby are, authorized, and that the authority granted herein shall expire with October 31, 1930.

Mr. Thom has been in almost daily touch with the White House and his office has acted as a clearing house to communicate to the various railroads requests for relief in particular sections which have been sent to the President by Congressmen and others. Through Mr. Thom the railroads generally in the affected districts expressed a willingness to co-operate to the fullest extent by establishing emergency rates, although they pointed out that they proposed to restrict the reductions so as not to make them available to speculators, and this idea was approved by the President.

Just before the commission had made public its emergency order, which had also been made public a little earlier at the White House, it had received a telegraphic request from the Illinois Central for sixth section permission to publish on one day's notice a rate of 17½ cents on range cattle from Rives, Tenn., to Baton Rouge, La., representing a 50 per cent reduction from the usual rate.

Arrangements for making the reductions were first worked out by the railroads in Official Classification territory, which includes most of the drought area, under the direction of Robert N. Collyer, chairman of the Eastern Traffic Executives' Association, in co-operation with the Car Service Division of the American Railway Association at Washington. Instead of individual roads filing tariffs covering various situations a very simple plan was arranged under which the responsibility for designating the districts to and from which the rates are to apply was placed on the Department of Agriculture, which was directed by the President to certify to the railways the counties in each state in which drought exists to such an extent as to justify movement at reduced rates. A joint tariff was then to be filed on behalf of the Official Classification Territory lines covering the reductions to and from points in the certified counties and the Car Service Division was to issue an embargo against the movement of hay, feed, water and livestock for handling under the emergency rates, except under permits issued with the approval of the county agents or other representative of the Department of Agriculture. This plan was approved by the executives of the eastern roads on Monday, August 11 and was submitted to President Hoover on Tuesday by Mr. Thom, Mr. Collyer and M. J. Gormley, chairman of the Car Service Division. The tariff was prepared and was expected to be filed with the commission on August 14 as soon as the department was able to furnish its list, to be supplemented later, of the affected counties.

The embargo circular issued by the Car Service Division referred to the tariff and stated that, acting as agent for all roads subscribers to the Car Service and Per Diem Agreements in Official Classification Territory it "hereby embargoes the movement of hay, feed, water and livestock, in carload lots, for handling under these emergency rates, except under permit."

Anyone desiring to obtain a permit authorizing the movement of the designated commodities covered by the embargo must first obtain approval of the county agent or other representative of the Department of Agriculture who is authorized by the department to approve applications for permits to the local railroad agent at the delivering point of the hay, feed or water, or the originating point of the livestock, in the drought area.

The local railroad agent upon receipt of this application for permit will transmit it to the transportation department officer of his railroad, requesting permit for such movement, such permit to specify the commodity to be shipped, the quantity, the shipping point, destination, the name of consignee and consignor, and the time limit in which shipments are to move. The transportation officer will issue the permit to the originating carrier. Copies of permits issued will be furnished currently to the district manager of the Car Service Division having jurisdiction in the territory in which the designated supplies are received—or originated, in the case of livestock.

The Car Service Division will police this movement through its organization to avoid the possibility of any shipments being made under these reduced rates for purposes other than relieving conditions caused by the drought.

The permit system has been employed before on several occasions when emergency movements were necessary, but has usually been adopted to afford priority in times of congestion.

The western and southern roads were kept advised of the plan adopted by the eastern lines and were expected to take action along somewhat similar lines.

The Department of Agriculture on August 13 furnished a partial list of 8 counties in Maryland, 44 in West Virginia, 39 in Ohio, 35 in Indiana, and 72 in Virginia which are indicated by data compiled to that date as being so seriously affected by the drought as to require emergency relief. It was stated that thus far the department had no definite information on the feed situation in southwestern Pennsylvania and that lists covering additional states were being compiled. The lists are based on the condition of crops and pastures as of August 1 and on telegraphic information from county agents and other sources. While the department's information was not complete it was said to indicate that it is or will be necessary to ship feed into these counties or to ship the livestock to other areas where feed and pastures are available. The letter from Secretary Hyde to Mr. Gormley said: "Your interest in this problem is greatly appreciated by this department and by the many farmers who will be aided by the prompt action you are taking."

President Hoover has been devoting a large part of his time to plans for relieving the drought situation and cancelled a vacation trip through the national parks to remain in Washington. He called a conference of the governors of 12 states to meet in Washington on August 14 to consider plans for co-operation between state and federal authorities.

The Northern Pacific and Great Northern have applied to the commission for sixth section permission to file on short notice tariffs extending additional facilities for grazing and feeding cattle and sheep in transit east of Minot, N. D.

A COLD STORAGE WAREHOUSE OF NOVEL DESIGN has recently been completed at Verona, Italy, according to Modern Transport (London). The new warehouse, which is circular in shape, is built in three tiers, each forming a concentric ring. The center of the building consists of a circular hall 80 ft. in diameter, with practically the whole area occupied by a turntable capable of holding two European freight cars. In addition to the main track leading to this turntable from outside the building, the table gives access to seven corridors, 18 ft. wide and capable of holding from two to four cars each, into which cars are run for unloading, icing and reloading purposes.

Looking Backward

Fifty Years Ago

The new line of the Wabash, St. Louis & Pacific [now the Wabash] was opened into Chicago on August 9, with trains temporarily running only to Archer avenue until legal complications allow the operation into the business district. At the present time the passenger service between Chicago and St. Louis, Mo., is handled by an express train in each direction daily.—*Railroad Gazette,* August 13, 1880.

The trunk line arbitrators who have undertaken the redistribution of the eastward shipments from Chicago, which average about 7,000 tons per day, have awarded 10 per cent of the traffic to the Grand Trunk [now part of the Canadian National], the newcomer in this apportionment. The apportionment for the other roads, exclusive of live stock shipments, is as follows: Michigan Central, 26 per cent; Lake Shore & Michigan Southern [now part of the New York Central], 23 per cent; Pittsburgh & Fort Wayne and Pan Handle [now parts of the Pennsylvania], 33 per cent, and Baltimore & Ohio, 8 per cent. During the year ending June 1, 1880, the shipments east from Chicago totaled 2,134,554 tons, a 90 per cent increase as compared with the year ending June 1, 1875.—*Railway Age,* August 19, 1880.

Twenty-Five Years Ago

The Census Bureau has prepared, under the direction of the statistician of the Interstate Commerce Commission, an estimate of the "commercial" value of the railroads of the United States, which places a figure of $11,244,852,000 on the operating property. The main factors used in arriving at this value have been the capital and the net earnings.—*Railroad Gazette,* August 18, 1905.

The new Canadian railway commission has begun to perform its rate-making function with a vigorous hand, the Grand Trunk and the Canadian Pacific having been ordered last week to reduce the rates on export grain from points in Ontario to Montreal to a level with those charged from points in the United States to the seaboard under similar circumstances.—*Railroad Gazette,* August 18, 1905.

The Interstate Commerce Commission is about to take steps to require all railroads engaged in interstate commerce to increase the minimum percentage of air brakes used on freight trains to as great an extent as conditions of equipment will permit. At present at least 50 per cent of the cars must be so controlled. The commission has become impressed with the danger attendant upon the operation of freight trains in which an insufficient number of cars are equipped with air brakes operated by the engineman.—*Railway Age,* August 18, 1905.

Ten Years Ago

American Railway Express Company employees, numbering approximately 75,000 members of four unions, were granted flat increases in wages of 16 cents per hour retroactive to May 1, 1920, by the United States Railroad Labor Board on August 10. It is estimated that the increases in wages provided for in the award will amount to approximately $30,000,000 per year.—*Railway Age,* August 13, 1920.

The Tie committee of the American Railway Association, which was instructed to report on "metal versus wooden ties," has reached the conclusion that there is no immediate need for a substitute cross tie, although it is urged that the railroads make a serious study of the subject. The committee stated that no substitute tie has yet been developed which can be recommended for general use on high-speed insulated track, and suggested that the development of substitute ties should be undertaken with a view to conserving the available timber supply and producing a track structure of longer life which may be maintained with less labor.—*Railway Age,* August 13, 1920.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

California—An Index to the State Sources of Agricultural Statistics. Part V—An Index to Some Unofficial Sources, compiled under the direction of M. J. Abbott, Agricultural Reference Librarian, University of California Library. Indexed by commodities. "Users of this Index should remember that it is merely a guide to the sources of certain statistics and that before they use the statistics they should carefully examine the accompanying text or any notes which may explain the terms used and the scope of the compilation." Preface, p. v Agricultural Economics Bibliography No. 31, Part V. 69 p. Pub. by U. S. Bureau of Agricultural Economics, Washington, D. C. *Apply.*

The Santa Fe Trail, by R. L. Duffus. A distinctive history of a route important to the commerce and to the romance of the United States from the time of Coronado to the entry of the first railroad train into Santa Fe, N. M., in 1880. Students of "commodities" and where they go and why will be interested in the highly varied items transported during the long history of the trail. Illustrated from old prints and photographs. 283 p. Pub. by Longmans, Green & Co., New York City. $5.00.

Wages in the United States 1914-1929. "This volume presents an analysis of the trend of Wages, Hours of Work, and Employment during the post-war years, and uses the results of the Board's early investigation of wages as a basis for comparing the present situation with that existing in the pre-war period." Preface, p. v. 223 p. Pub. by National Industrial Conference Board, Inc., New York City. $2.50.

Periodical Articles

The Diffusion of Stock Ownership in the United States, by Gardiner C. Means. Among the corporations listed are ten railroads. Numbers of stockholders shown for 1900, 1910, 1913, 1917, 1920, 1923 and 1928. Quarterly Journal of Economics, August 1930, p. 561-600.

A New Type of Ferro-Concrete Sleeper—The Prot Sleeper, by Marcel Prot. Discusses general features, stability, method of rail attachment, electrical insulation, weight, handling, repairs, price. Bulletin of the International Railway Congress Association, July 1930, p. 1701-1729.

The Railroads Gird for Battle, by James G. Lyne. For traffic, against competing forms of transport. "The railways, hog-tied by government regulation, are fighting for passenger traffic against adversaries which are restricted slightly if at all; a pinioned Gulliver goaded by free-moving Lilliputians, the private automobiles and bus lines." p. 399. American Mercury, August 1930, p. 398-405.

Stabilization of Employment of Railway Employees, by E. K. Hogan. "In the formulation of a program to remedy this situation [reduction of forces] it was recognized that improved machinery, new shop methods, lengthening of train and engine runs, elimination of shops and roundhouses, consolidation of facilities, and changes of similar nature mean the permanent abolition of jobs and should be dealt with separately from the irregularity of employment resulting from the ups and downs of railway traffic due to business activity, climate, weather, nature of traffic, and similar changeable factors." American Federationist, August 1930, p. 920-922.

Technological Unemployment, by Paul H. Douglas. Discusses whether workers displaced by technological progress are permanently unemployed and what can be done for those unemployed during industrial adjustments made necessary by the progress of science. American Federationist, August 1930, p. 923-950.

Odds and Ends of Railroading

Railway Mayor

R. S. Brent, agent for the Illinois Central at Crystal Springs, Miss., is another railroader who is mayor of the city in which he is employed. He has been alderman, street commissioner and school trustee, and is now serving his third term as mayor.

The Switching Puzzle Solved

WOODWARD, IOWA.

TO THE EDITOR:

The switching puzzle appearing several weeks ago is similar to an incident that actually happened in August, 1889, on the Breckenridge division of the St. Paul, Minneapolis & Manitoba (now the Great Northern) at Doran, Minn. An extra train selected that point to meet a regular train on time card rights and rules, not knowing the conditions existing. Doran, like most prairie sidings in that section previous to harvest time, was used to store cars. Couplings used then were of the link and pin type, and trainmen setting out stored cars had a habit of robbing them of the links and pins. The Doran siding was full to capacity—50 cars, all uncoupled and no means of coupling them.

The extra train westbound planned to reach Breckenridge, Minn., against a regular freight, No. 16, but a break-in-two made it necessary to stay at Doran. With No. 16 on the scene, the argument started, much of it unprintable. It resulted in the decision to send the extra train back to Tintah Junction (Yarmouth) as No. 16, with the regular No. 16 following as a second section, a procedure to which the fireman vigorously objected because of the additional work and a shortage of coal and water. It was highly improper for a fireman to protest, but a serious situation confronted them and when he insisted that it was possible to pass at Doran the trainmen listened.

The operation was conducted in this manner:

No. 16 consisted of an engine, 50 cars of wheat and a caboose, while the extra train had an engine, 49 cars and a caboose. Both trains back clear of the main line switches. Extra west's engine cuts off and goes in on the siding with the stored cars. No. 16 pulls in between the switches and cuts off the engine which goes in on the east end of the siding, pushing the stored cars and the extra west engine out on the main line, more than a train length west of the west switch. The engine of No. 16 then goes back through the siding and pushes No. 16 train west on the main line to clear the west siding switch, then cutting off this engine and having it pull the Extra West train in between the switches on the main line. No. 16 engine couples on to its own train, runs through the siding and proceeds east, while the Extra West engine pushes the stored cars in on the siding, couples on to its own train, which is now on the main line between the switches, and proceeds west. Both trains were on their way in 38 minutes after the action was outlined and started.

Without a doubt this was the high spot in brain work of that period when a man who had railroaded for five years was a wonder, especially if he had not been fired one or more times during that period.

O. P. M. HUFFMAN,
Agent, Chicago, Milwaukee, St. Paul & Pacific.

BINGHAMTON, N. Y.

TO THE EDITOR:

If there is an engine on the disabled train in the switching puzzle, as there must be according to all books of rules and railroad practice, or it is not a train, its solution can be obtained easily. If Mr. Seames does not have an engine in the siding with the disabled cars he should not call it a train.

MARK L. FULLER,
Trainman, Delaware & Hudson.

DENVER, COLORADO.

TO THE EDITOR:

My first experience with this example was during my first examination for promotion to position of conductor on the Northern Pacific at Livingston, Mont., in March, 1903. Trainmaster Dan Boyle, now a member of the Railroad Commission of Montana, was our "teacher." After seeing that he had the entire class in a wonderful head-on collision due to a mix-up in our understanding of train orders, he compromised by saying: "Let's do some sawing-by out on the line to help you fellows get your feet on the ground." The example as given by Mr. Seames was the "job" handed to us. Naturally, we did nothing but have the entire line tied up. He then let us down with the "easy" one of having two trains meet at a siding, one having 33 cars, the other 43, with a side track capacity of 29. We were able to make that saw-by in a fairly reasonable time.

To promote further interest in "skull-practice," will you have a train rules examiner answer the question: What is superior to Right? Of course we all know Right is superior to Class.

J. J. MALLANEY,
Service Agent, Interstate Commerce Commission.

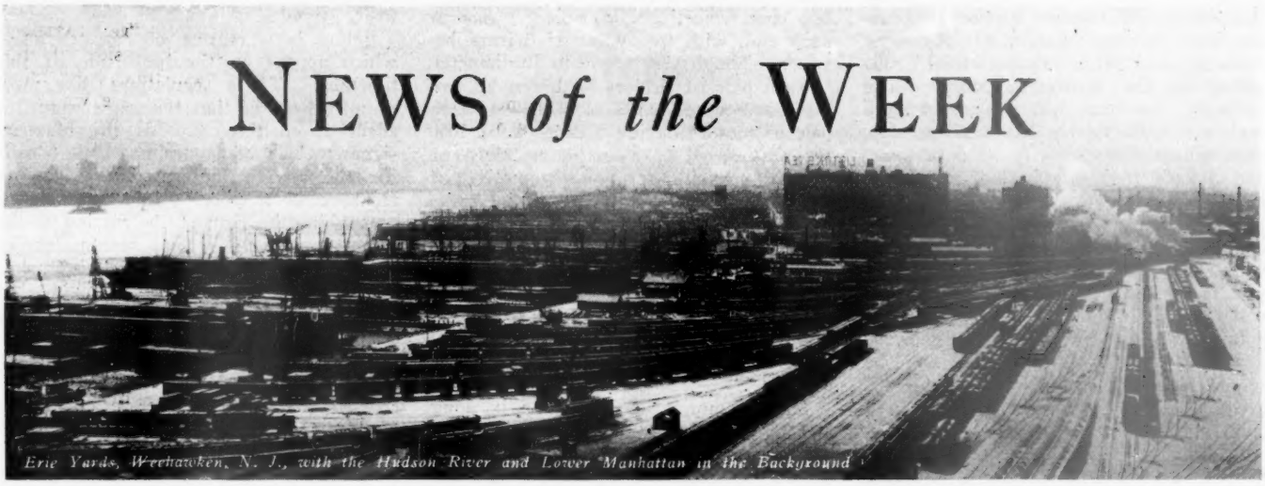
Replies containing solutions essentially identical to that submitted by Mr. Huffman of the Milwaukee were received from Thomas F. Curry, assistant yardmaster, Buffalo, Rochester & Pittsburgh, Rochester, N. Y.; A. T. Nelson, yardmaster, Minneapolis & St. Louis, Des Moines, Iowa; C. A. Pennington, superintendent, Cleveland, Cincinnati, Chicago & St. Louis, Louisville, Ky.; R. O. Miles, railway sales, Electric Storage Battery Company, Minneapolis, Minn.; L. G. Adams, assistant engineer, New York, New Haven & Hartford, Hamden, Conn.; C. P. Wagner, yardmaster, Baltimore & Ohio, Mansfield, Ohio; Joseph J. Lapworth, engineman, Canadian Pacific, Revelstoke, B. C.; Stanley Gaines, accounting department, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.; Edward M. Underhill, Glen Rock, N. J.; and Robert LeMassen, 15 years old, of Orange, N. J.

A Box Car Boy Scout Cabin

Two years ago Boy Scout Troup No. 60, 75 per cent of whose members are sons of Nashville, Chattanooga & St. Louis employees, needed a lodge for a meeting place. With no funds available for expensive construction, parts from dismantled box cars were obtained from the N., C. & St. L. freight car repair shop at Nashville for use in constructing the lodge. Car doors and siding constitute the sides and roof of the building, sawdust from the planing mill was used for the floor and a station type stove serves as the heating plant. Farm lanterns are used for lighting, old butting blocks and car flooring form the benches and a caboose smoke jack tops the lodge ceiling. Hung on the walls, along with a number of nature study subjects, are pictures of James Hill, Whitefoord R. Cole, Ralph Budd, W. W. Atterbury and J. A. Downs.

The Cabin Built of Box Car Material

NEWS *of the* WEEK



Erie Yards, Weehawken, N. J., with the Hudson River and Lower Manhattan in the Background

Wage Statistics for May

The number of employees reported to the Interstate Commerce Commission by Class I railways as of the middle of May was 1,601,485, and the total compensation was $229,628,656. Compared with returns for the corresponding month of last year the summary for May, 1930, shows a decrease of 112,904 in the total number of employees, or 6.59 per cent. The total compensation shows a decrease of $21,116,668, or 8.42 per cent.

Mexican National Statistical Bureau

The National Railways of Mexico on July 1 established a statistical department which will adopt new classifications of basic operating data similar to those used by the roads of the United States and Canada. With the data to be compiled by the statistical department, the National Lines expect to detect deficiencies in operation and confine expenditures to those that are necessary for adequate service. Details of the statistical department and its function were developed by E. P. Mallory, director of statistics of the Canadian National, and J. F. Pringle, assistant general superintendent of transportation of the Central region of that road.

Number of Railway Employees Greatly Reduced

A heavy reduction in the number of railway employees took place between May 15 and June 15, according to the preliminary statement of employment on Class I steam railways issued by the Interstate Commerce Commission. The number of employees as of the middle of June was 1,564,269, a decrease of approximately 156,000 or 9.9 per cent as compared with the number on June 15, 1929, and 9.88 per cent as compared with June 15, 1928. At the middle of May the number was 1,601,485, a decrease of 6.59 per cent as compared with the corresponding month of last year. The further decrease of 37,216 in May and June follows three months in which the monthly figures had shown increases as compared with the preceding months.

The largest percentage of reduction as of June 15 as compared with June, 1929, was reported for the maintenance of way and structures group, 14.59 per cent, while the decrease in the train and engine service group was 9.51 per cent. The maintenance of equipment and stores group showed a decrease of 9.72 per cent.

As compared with the number of employees in service in October, 1929, the number in June represents a reduction of approximately 185,000, some of which represents seasonal reduction. During the winter the railways, observing President Hoover's request, attempted to keep up their employment as much as possible and the reduction in numbers reported from month to month showed only slightly more than the usual seasonal reductions, but as the decrease in the volume of business continued the percentages of decrease as compared with the corresponding months of last year began to grow larger. for January the reduction was 2.11 per cent, for February, 3.86, for March, 4.97, and for April, 5.59.

Newspaper Seeks Electrification of Chicago Railroads

Electrification of steam operated suburban service and construction of new passenger terminals is asked for 31 railroads operating into Chicago in a complaint filed with the Illinois Commerce Commission by the Chicago Tribune on August 8. The complaint asks that the state commission undertake an investigation of the situation regarding electrification of suburban services within a radius of 50 miles of the city and enlargement of passenger station facilities, and that it require the railroads to file estimates of the cost of such construction. The state law, under which the commerce commission derives its powers, provides that that body may issue orders requiring any public utility to make additions, extensions, repairs, improvements or changes in its physical property and equipment.

Los Angeles to New York, 12½ Hours

Captain Frank M. Hawks, flying in a Wright-powered Travel Air racer from Los Angeles, Cal., to New York City, on Wednesday, August 13, arrived at Curtiss Airport at 6:41:30 p. m., having flown across the continent in 12 hours, 25 minutes, 3 seconds, and beating the best previous time by about two hours. The distance is estimated at 2,510 miles, making the average rate of speed over 200 miles an hour. Stops were made for fuel at Albuquerque, N. M., Witchita, Kan., and Indianapolis, Ind. Reports say that the time consumed in stops reduced the actual traveling time to 11 hours, 46 minutes, which means an average of about 3½ miles each minute. Captain Hawks estimated that favorable and unfavorable winds about balanced each other. He flew at a height of more than 5,000 ft. most of the way.

Industrial Development Program Successful on B. & M.

Industrial development projects involving the construction of new manufacturing or distributing plants on the lines of the Boston & Maine in eastern Massachusetts, at an aggregate cost of $2,250,000, and to employ 1,825 persons, are announced by the B. & M. as having been contracted for within the past two weeks. In all, four distinct projects embracing almost 500,000 square feet, or more than 11 acres of floor space, are involved; and in addition, the Boston & Maine has completed arrangements for occupancy and operation of a plant which has been vacant 10 years, by an industry which hereafter will move 10,000 tons of material annually through the Port of Boston.

Principal among the projects is the $1,500,000 program of the Simonds Saw & Steel Company, Inc., at Fitchburg, in connection with which that company has acquired the entire 54-acre car shop property of the Boston & Maine. The Simonds Company is to consolidate in an entirely new plant of 198,000 sq. ft. (almost 5 acres) its two present plants in Fitchburg, and to bring to New England the operations of their plant in Chicago, and of still another plant outside New England. Their plans provide for the addition of from 200 to 350 persons to their payroll, to bring the total to approximately 1,200 persons.

The New England Telephone & Telegraph Company and the Western Electric Company will build and occupy a new

warehouse and distributing plant in the Mt. Auburn-Watertown section, embracing the Coolidge Estate of 10 acres, fronting on Mt. Auburn street, also served by the Boston & Maine. The purchase was made last week, and there a plant to employ from 400 to 500 persons, and involve 200,000 sq. ft. of floor space and 100,000 feet of auxiliary working space, will be begun shortly.

In the same general vicinity, on Grove street, Watertown, the J. W. Greer Company last week began construction of the first section of a modern plant which will cost $158,000, and be devoted to the manufacture of modern special-purpose machines. This plant, which will be served by the Boston & Maine, will aggregate about 64,000 sq. ft., and will employ 100 persons.

In Malden, the National Biscuit Company contracted for a new distributing center to aggregate 10,000 sq. ft. of floor space and cost $40,000. The parcel is located on Washington street in the Oak Grove district, adjoining the Boston & Maine tracks, and was formerly owned by the United States Rubber Company.

At Ayer, the Boston & Maine was instrumental in the location of the International Purchasing Company in a plant of 30,000 sq. ft., through which will be handled from the Port of Boston rope fibre, etc., for various New England and western mills.

Electric Locomotives for the Pennsylvania

Two electric passenger locomotives of an entirely new type are now being operated experimentally by the Pennsylvania in the electrified zone surrounding Philadelphia. The locomotives were designed and built especially for the New York-Washington service when the line is completely electrified. They are the first through service electric passenger locomotives ever operated in and out of Philadelphia and are being tried out on through express trains between Philadelphia and New York, and between Philadelphia, Baltimore and Washington, within the limits of the present electrified trackage.

In the meantime, work is going forward rapidly on the electrification project itself. The line from Philadelphia to Trenton was completely electrified recently, while electric service was extended to Wilmington, Del., not quite two years ago. Work is now actively under way on the line between New York City and New Brunswick, N. J.

The new passenger locomotives were designed and built by the Pennsylvania in its Altoona, Pa., shops. The electrical equipment was produced by the Westinghouse Electric & Manufacturing Company. A new type of electric freight locomotive also designed for the New York-Washington electrified operation, will be brought out in the near future.

The new passenger locomotives have many unique and improved features, adapting them particularly to the through fast road service under heavy traffic conditions for which they are intended. They are known as class O-1 and have two four-wheel guiding trucks, one at each end, with two pairs of drivers between. The drivers are 72 in. in diameter.

Each pair of drivers is driven by two motors mounted on a steel frame, each pair of motors having a capacity of 1060 hp. at a speed of 56 miles an hour, or a total capacity for the locomotive of 2120 hp. at that speed.

The new locomotives are equipped with the coder system of cab signals. Wayside signal indications are exactly reproduced in the cab of the locomotive directly in front of the engineman and a change of indication causes a whistle to blow until shut off by either the engineman or fireman.

The locomotives are 52 ft. 8 in. long and 15 ft. high. In working order their total weight is a little less than 300,000 lb. with approximately 75,000 lb. on each driving axle.

The Pennsylvania Railroad's complete electrification program, as now announced, covers 800 miles of line and 2,760 miles of track, including the New York-Washington trackage, the main line from Paoli to Columbia, Pa., and the low-grade freight lines extending from the eastern terminals to the Susquehanna River valley.

A Timetable of 1843

The timetable of the Western Railroad, shown in reduced facsimile herewith, has been reproduced in Bulletin No. 22 of the Railway & Locomotive Historical Society (in connection with a list of all the locomotives that were used by that road) and is copied here by courtesy of the Historical Society. The Western is now a part of the Boston & Albany.

The subtitle of the timetable, "Western Trains," is the term used to denote the trains on the western section of the road —from Springfield, Mass., to Greenbush (East Albany), N. Y. The eastern half of the main line of the Boston & Albany consists of what was originally the Boston & Worcester, 44 miles, and the Western Railroad from Worcester to Springfield, 54 miles.

Below is a reprint of "REGULATIONS" which appear on the back side of this timetable. These regulations, like most or all others of that time, are vague or silent as to the color of the rear-end signal to be used on trains. Rule 6 calls for the use of lanterns but makes no mention of a color. Rule 5, however, prescribing the signal to be carried on the locomotive for a second section, names a *red* flag for this purpose. This implies the use of a red lantern at night; but whether or not the tail light was red does not appear.

The roads referred to in Rule 8 are the Norwich & Worcester, which was crossed at South Worcester, and the Hudson & Berkshire, the junction of which was at Chatham Four Corners.

The book of rules of the Western Railroad, issued in 1842, was reprinted in the *Railway Age* of March 17, and April 21, 1928.

Regulations

[WESTERN (MASS.) RAILROAD, A. D. 1843.]

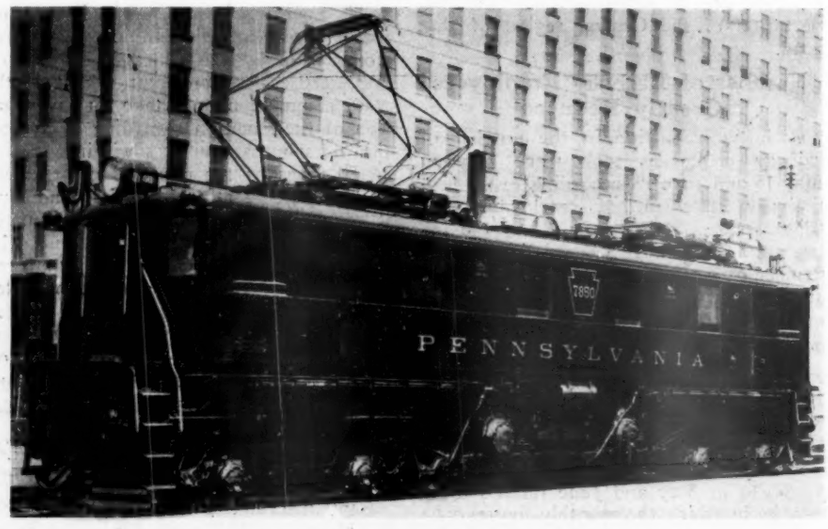
1. No train must under any circumstances leave a station before its time as specified in the timetable.

2. Passenger trains will not wait for freight trains—but when a meeting of passenger trains is expected, neither train will leave the station until the other arrives, or is heard from.

3. Freight trains will in all cases wait for passenger trains—and be kept entirely out of their way—never leaving a station on the time of a passenger train unless in consequence of positive information received from it. They will also wait for other freight trains at stations appointed for passing.

4. A freight train must not leave a station immediately preceding a station where a passenger train is expected to pass, unless it has its full running time as specified in the timetable.

5. A red flag must always be exhibited upon an engine when an engine other than that of a regular train is to follow it—and in case a regular train is divided into two or more distinct trains, flags will be kept flying upon all the engines of the trains except the last.



One of the Two Class O-1 Locomotives Now Under Test in the Philadelphia District

6. Lanterns must be exhibited at night at the rear of all trains and no excuse will be admitted for any neglect either in exhibiting or observing this signal.

7. All engines on approaching a station will sound the whistle at the posts set up as signals for that purpose—pass the switch cautiously; and in all cases stop at the station.

8. All engines before crossing at grade the N. & W., and the H. & B. Rail Roads, will make a full stop, and proceed only where there is seen to be no obstruction.

9. All persons whatever, employed upon the road, are required to give notice of any obstruction to the passage of the trains by exhibiting a red flag conspicuously and at a sufficient distance from the obstruction, in both directions of the road—and all conductors, enginemen, etc., connected with the train, are required to regard such a signal, and to proceed with extreme caution until the cause of the obstruction is ascertained.

10. The clock at the upper depot in Worcester shall be taken to be the standard time, and all conductors before leaving Worcester are required to compare and regulate their time by that clock, and to see that the clocks at all other stations which they pass conform to the standard time. The trains west of Springfield will in like manner be governed by the time at the Springfield depot.

Traffic

The Women's Traffic Club of Los Angeles (Cal.) held its regular meeting at its rooms in the Alexandria Hotel on August 6, Vice-president Irene F. Donahue (A. T. & S. F.) in the chair. The meeting was addressed by Miss Brobst, president of the California Legislative Council. The next meeting will be held on August 20.

Suburban passenger business on the Illinois Central in Chicago has shown a considerable increase during the first six months of 1930 as compared with the same period last year. In the first half of 1930, a total of 18,630,400 passengers were moved, which is an increase of 519,967 over the corresponding period last year. The gross revenue increased $56,610, or to $2,557,231.

The Interstate Commerce Commission has found not justified a general readjustment proposed by the railways of the freight rates on naval stores from points in south Atlantic and gulf states to points in trunk-line and New England territories, which had been suspended upon protests by producers, dealers and manufacturers. The schedules were ordered cancelled and the commission prescribed rates based on 29 per cent of the corresponding first-class rates.

In order to meet motor coach competition the National of Mexico has placed in service a rail motor car between Monterrey, N. L., and Nuevo Laredo, Tam., which operates over the 168 miles on a schedule of five hours, or from 35 to 90 min. faster than the time of the Mexico City-St. Louis trains between those points. The rail motor car leaves Monterrey daily at noon, arriving at Nuevo Laredo at 5:00 p.m., while south bound it leaves Nuevo Laredo at 12:55 p.m., arriving at Monterrey at 6:00 p.m.

Additional Time Asked for Grain Storage

E. B. Boyd, as agent for the Western Trunk Line railways, has applied to the Interstate Commerce Commission for authority for an extension of time for one year on expense bills covering grain in storage at Minneapolis, St. Paul and Minnesota Transfer, Minn., for the purpose of allowing additional time for the Grain Stabilization Corporation to find an outlet for approximately 2,000,000 bushels of wheat which it has kept in storage at those points for two or three years. The time limit expires on 426,000 bushels in September and on 1,500,000 in October and the application states that the corporation cannot see a satisfactory way of disposing of the grain before that time.

Southern To Establish Reduced Coach Fares

The Southern is planning to try the experiment of making special reduced coach fares to meet bus competition and the Interstate Commerce Commission is to waive certain of the requirements as to tariff publication. The road will file a tariff, effective on September 15, establishing rates, both one-way and round-trip, between Monroe, Va., and Westminster, S. C., and intermediate stations, expiring on March 31, on the basis of approximately one-half of the regular fares. The company originally proposed to make the rates 1½ cents a mile, but the exhibit filed in connection with its application to make non-applicable the regular fares on trains Nos. 45 and 46 set out specific rates.

B. & O. New York Trucking Plan Now Discontinued

The Baltimore & Ohio has discontinued its plan of co-ordinated rail-motor truck service which was inaugurated in New York on July 15 and temporarily suspended on July 25 (see *Railway Age* of August 2, page 258).

In connection with the B. & O.'s action, it is understood that the Pennsylvania and the Lehigh Valley have agreed to readjust their trucking arrangements for the handling of freight between their railheads in New Jersey and their off-

TIME TABLE.

WESTERN RAIL ROAD.

Times when Trains are to leave Stations.

Western Trains.—Dec. 4, 1843.

LEAVE.	Springfield to Greenbush. 1st Pass'r.	2d Pass'r.	Freight	Greenbush to Springfield. 1st Pass'r.	2d Pass'r.	Freight	Greenbush to St. Line	St. Line to Greenbush.
Springfield,	7.00 A. M.	12.45 M.	5.30 A. M.	12.30 M.	8.30 P. M	4.45 P. M.		
West Springfield,	7.04 "	12.49 "	5.40 "	12.26 "	8.26 "	4.35 "		
Westfield,	7.26 "	1.11 P.M	6.20 "	12.04 "	8.04 "	3.55 "		
Russell,	7.49 "	1.34 "	7.00 "	11.41 A. M.	7.41 "	3.10 "		
Chester Village,	8.01 "	1.46 "	7.20 "	11.29 "	7.29 "	2.51 "		
Chester Factory,	8.20 "	2.14§	8.00 "	11.09 "	7.09 "	2.14§		
Middlefield,	8.44*	2.29 "	8.44*	10.46 "	6.46 "	1.34 "		
Becket,	8.54 "	2.39 "	9.11 "	10.36 "	6.36 "	1.10 "		
Washington,	9.05 "	2.50 "	9.40 "	10.25 "	6.25 "	12.40 "		
Hinsdale,	9.18 "	3.03 "	10.12¶	10.12¶	6.12 "	12.25 "		
Dalton,	9.30 "	3.15 "	10.37 "	10.00 "	6.00 "	12.00 "		
Pittsfield,	9.45† "	3.30 "	11.30**	9.45† "	5.45 "	11.30**		
Shaker Village,	9.57‡ "	3.42 "	12.04 "	9.25 "	5.25 "	9.57‡ "		
Richmond,	10.11 "	3.56 "	12.39 "	9.11 "	5.11 "	9.25 "		
State Line,	10.21 "	4.06 "	1.04 P. M.	9.00 "	5.00 "	9.10 "	7.15 A. M.	6.00 P. M.
Canaan,	10.36 "	4.21 "	1.34 "	8.45‡‡ "	4.47 "	8.45‡‡ "	7.00 "	6.15 "
East Chatham,	10.49 "	4.34‖ "	2.04 "	8.32 "	4.34‖ "	8.15 "	6 47 "	6 28 "
Chatham 4 Corners,	11.14 "	4.59 "	2.54 "	8.15 "	4.15 "	7.40 "	6 30 "	6.48 "
Chatham Center,	11.31 "	5.16 "	3.24 "	7.56 "	3.58 "	7.10 "	6.11 "	7.06 "
Kinderhook,	11.41 "	5.26 "	3.48††	7.48 "	3.48††	6 55 "	6.03 "	7.15 "
Schodack,	12.05	5.49 "	4.33 "	7.25 "	3.25 "	6.05 "	5.40 "	7.38 "
Greenbush,	12.30 M.	6.15 P.M.	5.15 P. M.	7.00 A. M	3.00 P. M.	5.15 A. M.	5.15 A. M.	8.03 "

* 1st Pass. T. to Greenbush passes Ft. T. to Greenbush at Middlefield, at 8 44 A. M.
† 1st Pass. T. to do. passes 1st Pass. T. to Springfield at Pittsfield, at 9 45 A. M.
‡ 1st Pass. T. to do. passes Freight. T. to do. at Shaker Village, at 9 57 A. M.
§ 2d Pass. T. to do. passes Freight T. to do. at C. Factory, at 2 14 P. M.
‖ 2d Pass. T. to do. passes 2d Pass. T. to do. at E. Chatham, at 4 34 P. M.
¶ Freight T. to do. passes 1st Pass. T. to do. at Hinsdale, 10 12 A. M.
** Freight T. to do. passes Freight T. to do. at Pittsfield, at 11 30, A. M.
†† Freight T. to do. passes 2d Pass. T. to do. at Kinderhook, at 3 48. P. M.
‡‡ 1st Pass. T. to Springfield passes Freight T. to do. at Canaan, at 8 45 A. M.

The Housatonic Train will be considered as *irregular* train between this Line to Greenbush, and of course will keep aside from it when all regular trains in going westward; are leaving State Line, however, before 6 P. M. It will be considered a regular train in going from Greenbush to St. Line.

track inland stations on Manhattan Island. This readjustment is to be effected in order that truckmen, operating as agents for the railroads between the railheads and the inland stations, will not be interested in handling freight between the inland stations and the doors of Manhattan rail patrons. The Erie, which also operates inland stations, will continue its present arrangement with the United States Trucking Corporation which latter is controlled by the Van Sweringen interests.

Freight Commodity Statistics

The number of tons of revenue freight originated by Class I railways in the first quarter of 1930 was 266,311,395, a decrease of 20,922,482, according to the Interstate Commerce Commission's quarterly statement of freight commodity statistics. The number of tons carried was 496,300,811, a decrease of 53,079,820. All commodity groups participated in the decrease, but products of mines showed the greatest total reduction, accounting for approximately half of the difference between the figures for the two years. The number of tons carried was as follows:

	First Quarter 1930	1929	Increase 1930 over 1929
Products of agriculture	47,981,805	53,531,022	d 5,549,217
Animals and products	10,099,106	10,286,659	d 187,553
Products of mines	254,330,292	281,227,546	d 26,897,254
Products of forests	38,540,591	43,901,250	d 5,360,659
Manufactures & miscel.	132,179,798	145,752,623	d 13,572,825
All L. C. L. freight	13,169,219	14,681,531	d 1,512,312
Total	496,300,811	549,380,631	d 53,079,820

Railroads to Help Farmers

In answer to inquiries from government representatives, farm bureaus and political leaders, as to whether railroads will establish emergency rates on livestock, hay and other feed to aid the farmers in drought-stricken areas, the Western carriers have expressed a willingness to lower the rates if such action will benefit the farmers. The majority of railroads in the Chicago territory, however, have not yet received from shippers any requests for reductions.

The Illinois Central, which serves territory in the South suffering from low precipitation, has asked the Interstate Commerce Commission for permission to reduce rates on range cattle between Rives, Tenn., and Baton Rouge, La., 50 per cent. Eleven roads have agreed to reduce rates on hay to points in Indiana, according to the statement of a state officer.

The Northern Pacific plans to introduce emergency freight rates on Montana cattle and sheep as an aid in drought-stricken portions of that state as soon as permission is granted by the Interstate Commerce Commission. The road expects to haul stock from central and western Montana ranches to feeding points in eastern Montana, North Dakota and Minnesota, permit unloading for several months of feeding and then carry the stock on the market on low through rates. The rates would probably remain in effect until April.

Foreign

Leipzig Trade Fair to Open August 30

The annual fall trade fair at Leipzig, Germany, a recognized meeting place for producers and buyers of virtually all types of commercial and technical products, is to open this year on August 30 and continue through September 4. Basing advance estimates on the record of the annual spring fair, similar in all respects to the fall gathering, which was held this year early in March, between 2,000 and 3,000 manufacturers of construction, engineering and electrical equipment and metal products, machinery and tools of various kinds, many of them used directly or indirectly in railroading and other forms of transportation, are expected to maintain exhibits at the September fair. Buyers for these same products, at the last spring fair, numbered over 50,000.

The Leipzig Trade Fair, which is held twice each year, originated more than 700 years ago. It is now housed in some 60 permanent buildings, 16 of which are devoted to a special engineering section, in and near the city of Leipzig. The March, 1930, fair was attended by a total of nearly 10,000 exhibitors and by approximately 180,000 buyers of all commercial products. Although over 85 per cent of the exhibitors—manufacturers, wholesalers and agents—were German firms, the other 15 per cent represented some 23 other countries. Buyers from a total of 72 different countries were registered, although, like the exhibitors, the majority were from Germany.

Personal contacts and the opportunity for buyers and sellers to meet on a common ground are the greatest advantages offered by the semi-annual fairs, the management of which has developed, after centuries of experience, many conveniences for both groups. Needs of exhibitors and buyers are anticipated as to banking, details of packing, shipping, etc., while a free bureau of information, supplied with full details concerning customs regulations in all countries, is also maintained. Furthermore, exhibits, although spread over some 2,500,000 sq. ft. of floor space, are carefully grouped by classes.

Costa Rican Railways in 1929

In spite of the loss of traffic and unusually heavy expenses resulting from flood damage in the latter part of 1928 the Northern Railway of Costa Rica and its leased line, the Costa Rica Railway, were able to show an operating profit of $849,413 for the fiscal year 1929, according to Department of Commerce reports. This figure represents an increase of $360,882 over the net of $488,531 reported for 1928. A total of 1,086,039 passengers were carried during 1929 as compared with 1,096,703 in 1928, and 153,321 tons of freight originated, in addition to a large amount of freight received from connections. This traffic was handled at a total cost, for all operating expenses, of $2,863,796, as compared with 1928 operating expenses of $2,667,811. Operating revenues for 1929 totaled $3,713,209 ($3,156,342 in 1928). Equipment in use on the two systems at the close of the year 1929 included 43 locomotives, 994 freight cars, 53 passenger cars, 55 camp cars, 18 cabooses, and 17 miscellaneous cars. The floods referred to above, although actually occurring in November, 1928, interrupted service on some sections of the line for the first quarter of 1929, while the cost of rebuilding the damaged portions (including expenditures in December, 1928) amounted to $544,616.

The Ferrocarril al Pacifico (owned and operated by the Costa Rican government) reported revenues of $998,631 and expenses of $688,323 for 1929, leaving a profit for the year of $310,308. This compares with a 1928 net of $210,930, resulting from revenues of $745,013 and expenses of $534,083. The government road, which has about 72 miles of main line, owned, at the end of 1929, 16 locomotives, 230 freight cars and 15 passenger cars, and had 10 electric locomotives under construction.

Hall No. 1, Leipzig Trade Fair, Showing Some of the Transportation Exhibits

Equipment and Supplies

Locomotives

THE NATIONAL OF MEXICO is inquiring for one to ten 2-6-6-2 type locomotives.

THE RIO GRANDE DO SUL is inquiring for 10 Garratt type locomotives. Dr. Octacilio Pereira, Porto Alegre, Rio Grande do Sul, Brazil, is general manager.

THE LEHIGH VALLEY has ordered one locomotive of the 4-8-4 type from the Baldwin Locomotive Works. This is in addition to one locomotive ordered from another builder and reported in the *Railway Age* of August 9.

Freight Cars

THE AMERICAN SMELTING & REFINING COMPANY is inquiring for 50 to 75 gondola cars.

THE ELGIN, JOLIET & EASTERN has ordered 300 flat cars and 250 gondola cars to be built in its own shops.

HALEY, CHISHOLM & MORRIS, Hinton, W. Va., have ordered 20 air dump cars of 20-yd. capacity from the Koppel Industrial Car & Equipment Company.

Passenger Cars

THE MAINE CENTRAL has ordered five deluxe steel coaches and two steel combination baggage and smoking cars from the Osgood Bradley Car Company. Inquiry for this equipment was reported in the *Railway Age* of June 14.

Signaling

THE PENNSYLVANIA has ordered from the Union Switch & Signal Company an electro-pneumatic interlocking machine of 51 levers, Model 14, together with position light signals and other material, for a new plant at Oil City, Pa.

THE BOSTON & MAINE has contracted with the Union Switch & Signal Company for the installation of an electro-pneumatic interlocking at Johnsonville, N. Y., the machine to have a 46-lever frame. Searchlight signals will be used. This interlocking station will also be connected, for all necessary control, with the centralized traffic control system which is in service between Eagle Bridge, N. Y., and Hoosick Junction; four miles, double track.

Highway Crossing Signals in Ohio

The Public Utilities Commission of Ohio, following recent studies of safety at highway crossings in that state, has issued orders for the installation of flashing light signals at a large number of crossings. The Pennsylvania alone is to install signals at 38 crossings, at an aggregate cost of about $100,000. The locations of the crossings to be thus signaled are approximately indicated by the following list of towns: Ashtabula, Clark, Fairfield, Franklin, Mahoning, Marion, Muskingum, Noble, Richland, Seneca, Tuscarawas, Trumbull, Wayne, Delaware, Franklin, Montgomery, Ashland, Columbiana, Jefferson, Knox, Butler, Greene, Preble, Harrison, Darke, Clermont.

A similar list of points on the Baltimore & Ohio where crossing signals are to be installed shows: Butler, Clinton, Trumbull, Geauga, Guernsey, Highland, Huron, Jackson, Knox, Lake, Lorain, Medina, Richland, Stark.

Machinery and Tools

THE CHESAPEAKE & OHIO has ordered one 30-ton pile driver from the Browning Crane Company.

* * * *

Along the Northern Pacific in Western Montana, from the Rear of the "North Coast Limited"

Supply Trade

The Chicago Bridge & Iron Works, Chicago, has opened a district sales office at Tulsa, Okla. **D. A. Leach** is in charge.

Swift & Company, Chicago, has sold the patents, patterns and goodwill of its packing house machinery division of the Mechanical Manufacturing Company, to the **Allbright Nell Company.**

John M. Mulholand, sales representative of the **O. F. Jordan Company,** East Chicago, Ind., has been elected vice-president in charge of sales to succeed **A. L. Greenabaum,** deceased.

Theodore Tomlinson Kennedy has been appointed district manager of the Los Angeles, Cal., office of the **Okonite Company,** Passaic, N. J. Mr. Kennedy was born in New York and was educated in Virginia. Shortly after leaving college he joined the Three Hundred and Twenty-Eighth Field Artillery and served in the American Expeditionary Forces in France where he was given the commission of captain. After the war he was employed by the Port of Havana Docks Company, Havana, Cuba, in an engineering capacity. He entered the service of the Okonite Company in 1924 and was promoted to the district office of that company in San Francisco in 1927 serving as sales representative in the Pacific Coast territory.

H. W. Protzeller, development engineer of the **O. F. Jordan Company,** East Chicago, Ind., has resigned to become engineer, maintenance equipment, of **Fairmont Railway Motors, Inc.,** Chicago. He was born in 1886 in Allentown, Pa., and was graduated from Lehigh Uni-

H. W. Protzeller

versity. He then entered the employ of the General Electric Company where he spent several years in the construction department installing railway equipment. He resigned from this company to become assistant superintendent of the Twin City Rapid Transit Company, Minneapolis, Minn., and three years later became general superintendent of transportation of St. Marys Traction Company, Sault Ste. Marie, Mich. and

Ont. After holding this position for two years, he served as consulting engineer for electric railways in Minnesota, Michigan and Illinois for a period of two years. During the next eight years he organized and built the Minnesota Northwestern Electric Railway and operated it as general manager. In 1914 he entered the employ of the O. F. Jordan Company as development engineer, which position he has held until his resignation.

R. D. Bartlett, vice-president of the **Ryan Car Company,** Chicago, resigned on August 6, to become president of the **Waterhouse Equipment Company,** Inc., Jackson, Miss., distributors of highway and contractors machinery and supplies, after he had purchased the capital stock and re-organized the latter company. Mr. Bartlett was born on November 12, 1886, at Rochester, N. Y., and graduated from the University of Michigan in 1907. In the following year he was admitted to the Illinois Bar and commenced the practise of law. He entered the employ of the New York Central

R. D. Bartlett

in 1910, and in 1918 was made office assistant to the regional director of the eastern region of the Railroad Administration. After the termination of federal control he became general manager of the Streator Car Company, which position he held until October, 1922, when he was appointed secretary and treasurer of the Ryan Car Company. In September, 1924, he was also made assistant to the president and in October, 1924, was elected vice-president, which position he has held until his resignation.

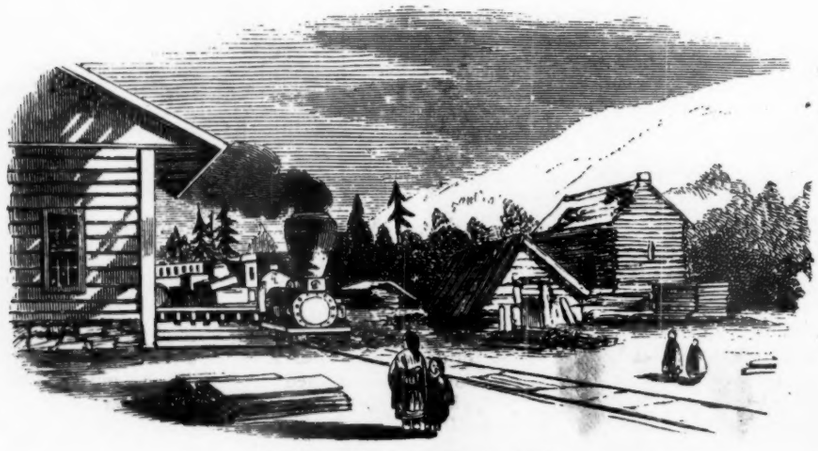
Obituary

James C. Davis, advisory operating vice-president of the American Steel Foundries, Chicago, died, at Mackinac Island, Mich., on August 10. In 1896 Mr. Davis was appointed general superintendent of operations of the Sargent Company, becoming general superintendent of the Leighton & Howard Steel

James C. Davis

Company, St. Louis, Mo., in 1901. When those two companies were absorbed by the American Steel Foundries in 1902, he was appointed western district manager of the latter company, and in June, 1905, he was promoted to assistant to the first vice-president in charge of operations at Chicago. In 1912, he was elected fourth vice-president in charge of foundry operations, a position he held until 1929, when he was elected advisory operating vice-president.

* * * *



Great Valley, N. Y., in 1851

From the Illustrated American News, New York; Picture Resurrected by the Erie Railroad

Construction

CANADIAN NATIONAL.—This company has awarded to Foundation Maritime, Ltd., Halifax, N. S., a contract for the superstructure of a 100-room hotel to be built at Kent and Pownall streets, Charlottetown, P. E. I. Contracts have also been awarded to the Richardson Construction Company, Toronto, Ont., for the construction of subways under this company's tracks at Gerrard street and Carlaw avenue, Toronto, to remove dangerous traffic conditions now existing at those two points. The estimated cost of this work is $412,000, of which $312,000 will be borne by the city of Toronto and the remainder by the railroad. The Canadian National has also let to Johnson Bros., Toronto, contracts for the construction of a bridge to carry Kingston road (King's highway No. 2) over the main line of the C. N. R. between Toronto and Montreal at a point about 10 miles east of Toronto, between Scarborough Junction, Ont., and Port Union; and for the construction of a subway to carry King's highway No. 7 under the C. N. R. tracks at Concord station, approximately 14 miles from Toronto on the Newmarket subdivision. The construction of new steel and concrete bridges to replace existing timber bridges at Bethune street, Peterborough, Ont., and at Eglinton avenue, York, Ont., and of a grade crossing elimination project at Victoria Park avenue, Toronto, are also under consideration and have all received the necessary approval of municipal authorities.

CANADIAN PACIFIC.—The Board of Railway Commissioners of Canada has approved proposed locations for this company's Wolfe's Cove branch in the city of Quebec, Que., described in the *Railway Age* of April 12 and July 12, and for its Ile Perrot branch, to run about 7.5 miles southeasterly from a point near Vaudreuil, Que.

CANADIAN PACIFIC (Dominion Atlantic).—A contract for a new 100-room hotel, to be known as the Cornwallis Inn, replacing an existing hotel of the same name, at Main street and Cornwallis avenue, Kentville, N. S., has been awarded by the Dominion Atlantic, a C. P. R. subsidiary, to the Parsons Ed. Construction Company, Moncton, N. B., at a cost of approximately $750,000.

CHESAPEAKE & OHIO.—This company has authorized the extension of a passing track and the rearrangement of water station facilities at Buchanan, Va., at a probable cost of $59,600, and the extension of a set off track at Burks, Va., at an estimated approximate cost of $25,600.

CHICAGO & NORTH WESTERN.—A contract has been let to the Adams Construction Company, Chicago, for the construction of an inbound and outbound freight station immediately west of Orleans street on the north bank of the Chicago river at Chicago. This building and ac-

companying facilities will cost about $125,000. Bids will be closed on August 19 for the construction of a new express terminal at Chicago.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—A contract for excavation for the depression of the tracks of this company between Galena and State streets at Milwaukee, Wis., 5,500 ft., has been awarded to R. H. Gumz, Milwaukee. This represents the third stage of the project for the separation of grades of this road's tracks and the city streets at Milwaukee and involves about 200,000 cu. yd. of excavation. Four viaducts will be constructed to carry as many streets over the tracks at a later date.

GULF, COLORADO & SANTA FE:—A contract has been let to the McCall Engineering Company, Waco, Tex., at a cost of $50,000, for the construction of a highway subway under the tracks of this company at Neches street, Coleman, Tex. This work involves necessary grading, construction of concrete abutments and a drainage culvert, as well as the construction of a 52-ft. steel railroad span over the street.

ILLINOIS TERMINAL.—A contract has been let to the Smith & Brennan Concrete Pile Company, St. Louis, Mo., for the furnishing of 2,000 reinforced concrete piles in lengths ranging up to 70 ft. for use in the trestle and footings of the elevated line to connect the McKinley Bridge with the new subway and underground terminal at Twelfth street and Lucas avenue at St. Louis. Company forces have begun the excavation for the double track subway in Twelfth street south from a point near Cass avenue. This subway will be of the open cut type to be later covered by a steel framework to support the street above. A contract for the excavation for the construction of the 20-story office terminal and warehouse building at Twelfth, High and Morgan streets and Lucas avenue, St. Louis, has been let to the G. Locke Tarlton Company, St. Louis.

IMPERIAL PETROLEUM EXPLORATION COMPANY.—This company, located at Tampico, Tam., has purchased the 38-mile railroad extending between Homo, Tam., and Panuco, Ver. C., in the Tampico district, from the Corona Oil Company, a subsidiary of the Royal Dutch Shell interests, and the president of the purchasing company, Meyer Katz, has announced that the road will be extended from Panuco to El Higo, Ver. C., 32 miles, upon completion of a location survey which is now in progress.

LOS ANGELES & SALT LAKE.—This company on August 8 asked 19 contractors to submit bids for the construction of a branch line from a point on the main line between Bracken, Nev., and Pierce to a connection with the proposed government railroad at the site of the Boulder dam on the Colorado river, about 22 miles.

NEWFOUNDLAND.—This company plans the construction of a new bridge across the Crabbes river, at a point 60 miles from its western terminus at Port-aux-Basques, to replace a bridge carried away by ice in March of this year. The temporary timber bridge which is now in service will be replaced by a new steel and reinforced concrete bridge consisting of two through truss spans, each 190 ft. in length, parallel to the old bridge, but about 30 ft. upstream, and eight feet higher above normal water level.

NEW YORK CENTRAL.—The Public Service Commission of New York has approved plans, specifications and estimates of cost amounting to $206,540, exclusive of land and damages, for the elimination of the Nichols avenue grade crossing of the New York Central tracks in Syracuse, N. Y. The elimination, which will be carried out by the extension of Midler avenue, is one of the largest individual projects in the railroad's general $30,000,000 improvement and crossing elimination plan for the city of Syracuse, as described in the *Railway Age* of November 16, 1929.

NEW YORK, NEW HAVEN & HARTFORD.—This company has authorized the installation, at a cost of about $42,000, of a gantry crane in its Taylor Street yard at Springfield, Mass. The work is to be done by company forces.

NORFOLK & WESTERN.—Authority has recently been issued by this company for the erection of a new abutment and the lengthening of bridge No. 349-A, Bristol, Va., at a cost of about $33,000, so that a highway may be constructed underneath the rebuilt bridge. The Norfolk & Western has also authorized the elimination of two grade crossings between Blackstone, Va., and Wilson; the extending and covering of a platform at the Columbus, Ohio, freight station, and the construction of a concrete bridge at Marburg avenue, Cincinnati, Ohio.

ONEIDA & WESTERN.—The Interstate Commerce Commission has granted the application of this company for authority to build an extension from its present western terminus at East Jamestown, Tenn., southwesterly through the town of Jamestown to a point on or near the Sergeant Alvin C. York highway, a total distance of about nine miles. The cost of the proposed extension is estimated at approximately $84,000. Work is to begin immediately and to be completed in about four months.

PENNSYLVANIA.—This company has awarded to the Nicholson Company, Inc., of New York City, a contract for the construction of coal silos at Seventy-third street and Grays Ferry avenue, Philadelphia, Pa., at a cost of approximately $33,000.

ST. LOUIS-SAN FRANCISCO.—A contract for the construction of an extension of the Shamrock branch from Shamrock, Okla., to Drumright, three miles, has been awarded to Allhands & Davis, Joplin, Mo. at a cost of about $120,000. A contract for river bank protection work for this road and the Arkansas & Memphis Railway Bridge & Terminal Company along the Mississippi river at Memphis, Tenn. at the Frisco and Harahan bridges has been awarded to the Massman Construction Company, Kansas City, Mo. at a cost of about $150,000. This work will include the placement of willow mattresses and rip rap around the piers of the two bridges.

SOUTHERN PACIFIC. — The Interstate Commerce Commission has granted this company's application to construct a branch line from a point at or near Cordelia, on its Napa branch, northerly to a point in the vicinity of a new state highway, a distance of 0.7 miles, all in Solano County, Cal. The cost of construction, which is to be begun immediately and to be completed within six months, is estimated at approximately $40,611.

TEMISKAMING & NORTHERN ONTARIO.—In connection with the extension of its present line from Coral Rapids, Ont., to a point on James Bay, a distance of approximately 93 miles, this company is proceeding with the final location of the new line between the crossing of the Moose river and tidewater. Although authority to proceed with the construction of the second section of the line, 48 miles, from the Moose river crossing to a terminal on James Bay on the northwest bank of the Moose river estuary, at about M.P. 190, has not yet been received, it is understood that this work is to be begun in the near future. A contract for the construction of the first section of the line, extending 45 miles from Coral Rapids (M.P. 97 north of Cochrane, Ont.) through Blacksmith Rapids, or Onakawana, as the settlement will be known, on the Abitibi river, at M. P. 127, to the Moose river crossing at M. P. 142, was awarded to H. F. McLean, Ltd., Toronto, Ont., as reported in the *Railway Age* of March 1. This contract also includes the substructure for the Moose river bridge, which will probably be of the deck plate girder type, and at least 1,800 ft. in length.

TERMINAL RAILROAD ASSOCIATION.—A contract for 6,000 reinforced concrete piles having lengths ranging from 25 to 30 ft. for use in the construction of the merchandise mart at St. Louis, Mo., has been awarded to the Smith & Brennan Concrete Pile Company, St. Louis, at a cost of about $225,000.

TEXARKANA & FORT SMITH.—This company plans the construction of a new bridge over the Little river at Morris Ferry, Ark., which will include three deck plate girder spans, each 84 ft. in length, and about 1,100 ft. of pile trestle approaches.

WABASH.—A contract for the construction of the substructure including concrete piers of the new double-track bridge to be constructed over the Missouri river at St. Charles, Mo., has been awarded to the Missouri Valley Bridge & Iron Company, Leavenworth, Kan.

Railway Finance

ATLANTIC COAST LINE.—*Bonds.*—The Interstate Commerce Commission has granted this road authority to procure the authentication and delivery of $1,150,000 of its general unified mortgage 4½ per cent bonds. Proceeds of the issue will be used to reimburse the treasury for capital expenditures heretofore made.

BALTIMORE & OHIO.—*Acquisition of C. & A.*—This company has entered into an agreement through Kuhn, Loeb & Co., with the protective committee for the Chicago & Alton 3½ per cent first lien bonds and other holders of large amounts of that issue of bonds and with all the holders of the general mortgage twenty-year 6 per cent bonds for the purchase of the 3½ per cent first lien bonds and the general mortgage twenty-year 6 per cent bonds. In accordance with the agreement an offer will be made to all holders of the 3½ per cent first lien bonds for the purchase thereof, with all past due coupons attached thereto, at a price of $800 flat. Holders of a large majority of the bonds of that issue have signified their intention of accepting the offer.

BOSTON & MAINE.—*Operation of the Vermont Valley and the Sullivan County.*—Extension of agreements under which this road operates the Vermont Valley and the Sullivan County have been approved by the Interstate Commerce Commission.

CHESAPEAKE BEACH.—*Ferry Service.*—This company has been authorized by the Interstate Commerce Commission to establish ferry service across Chesapeake Bay between Chesapeake Beach and a point on Trippe's Bay, near Hudson, Md.

CHICAGO & NORTH WESTERN.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority for the authentication and delivery of $1,200,000 of general mortgage 4½ per cent bonds of 1987, to be held in the treasury until further order.

GREAT NORTHERN PACIFIC.—*Unification Case.*—The South Dakota railroad commission has petitioned the Interstate Commerce Commission to reopen the unification case for further hearing and argument on the ground that if the proposed unification is permitted the provision of law that competition shall be preserved "as fully as possible" will be nullified.

KAHULUI.—*Stock.*—This company has been granted authority by the Interstate Commerce Commission to issue $600,000 of capital stock consisting of 6000 shares of the par value of $100 each. The proposed stock is to be issued to capitalize permanently invested surplus and will be distributed as a stock dividend.

LAKE PROVIDENCE, TEXARKANA & WESTERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Sondheimer to Dark Swamp, La., 8 miles.

MISSOURI PACIFIC.—*Bonds.*—This company has been granted authority by the Interstate Commerce Commission to procure authentication and delivery of $20,750,000 of its first and refunding mortgage 5 per cent bonds, series H, and to pledge and repledge from time to time to and including June 30, 1931, all or any part of $16,700,000 of said bonds as collateral for short term notes.

NEW ORLEANS GREAT NORTHERN.—*Equipment Trust Certificates.*—This company has been granted authority by the Interstate Commerce Commission to assume obligation and liability in respect of not exceeding $600,000 of equipment trust certificates to be issued by the Merchants Bank & Trust Company of Jackson, Miss., as trustee and sold to the highest bidder, but at not less than par and accrued dividends.

NEW YORK CENTRAL.—*Lease.*—This company and the Michigan Central have applied to the Interstate Commerce Commission for authority for the continued control, under lease, of the Lansing Manufacturers' Railroad, which has been operated under an operating agreement that expired on July 1.

PARIS & MT. PLEASANT.—*Sale of Railroad.*—This railroad, which operates 51 miles of line between Paris, Tex., and Mt. Pleasant, and which has been in receivership since February 26, 1920, has been sold to Percy Jones of Abilene, Tex.

PENNSYLVANIA. — *Acquisition.* — This company and the Pittsburgh, Ohio Valley & Cincinnati have applied to the Interstate Commerce Commission for authority to purchase part of the Ohio River & Western from Bellaire to Key, Ohio, 11.5 miles, in the event the commission permits the abandonment of the Ohio River & Western, for which it has asked authority, from Bellaire to Woodsfield, Ohio, 42.2 miles.

PENNSYLVANIA.—*Bonds of the Pennsylvania, Ohio & Detroit.*—This company has been granted authority by the Interstate Commerce Commission to assume obligation and liability, as lessee and guarantor, in respect of an issue of $1,416,000 of first and refunding mortgage bonds, which the Pennsylvania, Ohio & Detroit has been authorized to issue and deliver to it.

UPPER MERION & PLYMOUTH.—*Acquisition.*—This company has been authorized by the Interstate Commerce Commission to acquire certain railway tracks located at Swedeland, Montgomery County, Pa., and now owned by the Rainey-Wood Coke Company.

Stock.—It has also been authorized to issue $128,000 of its common stock consisting of 2,560 shares of the par value of $50 each, to be sold at par to the Alan Wood Steel Company, the proceeds to be used in connection with the acquisition mentioned in the foregoing.

WHITE RIVER.—*Acquisition and Stock Issue.*—This company, the White River Railroad, Inc., has been authorized by the Interstate Commerce Commission to acquire and operate the line formerly owned by the White River Railroad Company in Windsor County, Vt. Authorization was at the same time given for the issuance of $225,000 of the common stock of the White River Railroad, Inc., in connection with the acquisition.

Dividends Declared

Canadian Pacific.—Common, $2.50, quarterly; preferred, $2, semi-annually, both payable October 1 to holders of record September 2.

Missouri Pacific.—Preferred, $1.25, quarterly, payable October 1 to holders of record September 15.

Texas & Pacific.—Common and preferred, $1.25, quarterly, both payable September 30 to holders of record September 15.

Average Prices of Stocks and of Bonds

	Aug. 12	Last week	Last year
Average price of 20 representative railway stocks.	110.63	116.37	153.52
Average price of 20 representative railway bonds..	94.92	94.78	90.11

PROPER OPERATION of the suburban passenger service at the Dearborn Street station at Chicago was threatened on August 11 when the city commissioner of public works, Richard W. Wolfe, ordered the Chicago & Western Indiana to remove its tracks from Plymouth court, Taylor street and two alleys, all of which are adjacent to the passenger terminal and form a part of the station facilities. The railroad derives its authority to occupy these streets from two ordinances, one adopted in 1915 and the other in 1924, each of which was to expire at the end of a period of five years. The order issued by the public works commissioner also directed that the streets be restored to a condition safe for public travel. Officers of the railroad have not indicated what action they will take in the matter.

* * *

At Puerto Cortez, Honduras

Railway Officers

Executive

Horace Johnson has retired as president and general manager of the Duluth & Iron Range, with headquarters at Duluth, Minn., after 53 years of railway service, 42 of which have been with that railroad. Mr. Johnson was born at London, England in May, 1856, and entered railway service in 1877 on the Chicago & Alton. Later he was employed by the Chicago, Milwaukee & St. Paul, the Atchison, Topeka & Santa Fe and the Chicago & North Western, entering the service of the Duluth & Iron Range in November, 1888, as a bookkeeper and assistant to the auditor and general freight and passenger agent at Duluth. In 1902 he was promoted to secretary, two years later he became a member of the board of directors and in 1906 he was appointed auditor and general freight and passenger agent. Shortly after the latter appointment he also became secretary and auditor of a number of United States Steel Corporation subsidiaries, including the Spirit Lake Transfer Railway, the Interstate Transfer Railway and the Agate Bay Land Company, positions he retained until federal control of the railroads in 1918. In 1920 Mr. Johnson was elected vice-president of the Duluth & Iron Range, being further promoted to president and general manager on May 11, 1926. Subsequent to January 10, 1930, when the operation of the D. & I. R. was taken over by the Duluth, Missabe & Northern, Mr. Johnson served as president and general manager of the corporate organization.

Financial, Legal and Accounting

O. D. Appleyard, freight claim agent of the Indiana Harbor Belt, with headquarters at Gibson, Ind., has also been appointed to a similar position on the Chicago Junction and the Chicago River & Indiana, in charge of loss and damage claims.

Fred J. Schillinger, who has been promoted to freight claim agent of the Wabash, with headquarters at St. Louis, Mo., has been connected with that railroad for more than 15 years. He was born at St. Louis on September 9, 1885, and attended the public schools in that city. On June 1, 1901, Mr. Schillinger entered railway service in a clerical position on the Missouri Pacific, being engaged in that capacity on the Missouri Pacific and the Wabash until September 1, 1909, when he was appointed claim investigator on the Missouri-Kansas-Texas. He was placed in charge of claims on perishable traffic on the Wabash on April 27, 1915, and seven years later he was advanced to traveling claim adjuster. On May 15, 1926, he was further advanced to assistant freight claim agent, his promotion to freight claim agent becoming effective on August 1.

P. Lopez, assistant superintendent of car service of the National Railways of Mexico, has been appointed head of the statistical department, a newly created position, with headquarters at Mexico, D. F. Mr. Lopez was born at Zacatecas, Zac., on March 3, 1881, and attended both grammar and high school. He entered railway service on January 20, 1899, as a telegraph operator on the Mexican National (now the National of Mexico). After occupying a number of

P. Lopez

positions in the operating department, including those of train dispatcher and trainmaster during the next 18 years, he was promoted to division superintendent with headquarters at Mexico, in 1917. In the same year he was appointed purchasing agent of the National Lines and, in 1919, he became superintendent of car service. Later Mr. Lopez was appointed assistant superintendent of car service, a position he held until his appointment as head of the statistical department on July 1.

Operating

H. N. Rowles, assistant road foreman of engines on the Eastern division of the Pennsylvania, has been appointed assistant trainmaster-assistant road foreman of engines on the Pittsburgh division succeeding **R. J. Doyle,** assistant trainmaster, who has been assigned to special duty.

The position of superintendent of terminals of the National of Mexico at Tampico, Tam., was abolished on August 1 and the terminals at that point have been consolidated with the Cardenas division. **A. Galvan,** superintendent of terminals, and **A. Arenal,** assistant superintendent, have been transferred to the staff of the Cardenas division.

Traffic

Alfonso Molinar, assistant general agent of the passenger department of the Missouri Pacific at Mexico, D. F., has been appointed general Mexican agent of the Pennsylvania, with headquarters at the same point, effective August 15. Mr. Molinar was born at Chihuahua, Chih., in 1898, and attended the University of California. Prior to his entry into railroad service on the Missouri Pacific in 1925, he had served as assistant to the freight agent of the United States Steel Products Company at San Francisco, Cal., as secretary to the comptroller of the Mexican Eagle Oil Company at Mexico City and as an assistant in the legal department of the American Smelting & Refining Company at New York.

Howard G. Settle, assistant to freight traffic manager of the Baltimore & Ohio, has been appointed general freight agent, with headquarters at Baltimore, Md., as before. Mr. Settle was born on July 24, 1882, at Columbia, Ohio, and received his education in the public schools at Grove City, Ohio, and at Ohio State University at Columbus. He entered railroad service in February, 1900, with the Baltimore & Ohio at Cincinnati, Ohio, and until August 1, 1919, he held various positions in the general freight office there. In August, 1919, he was appointed division freight agent at Chillicothe, Ohio, and on September 15, 1921, he was transferred, in the same capacity, to Seymour, Ind. On July 1, 1922, he was promoted to assistant general freight agent, and in October, 1926, he became assistant to freight traffic manager, which position he held until his recent promotion, in which capacity he was engaged in defending formal complaint cases before state and Federal Commissions.

George M. Wood, whose retirement from the position of freight traffic manager of the New York, New Haven & Hartford was announced in the *Railway Age* of August 9, page 305, was born on November 28, 1872, at Newton, Mass. He received a public school educa-

George M. Wood

tion and entered railway service in 1888 as a clerk in the general freight department of the Old Colony Railway (now part of the New Haven). From 1901 to 1906 he was chief clerk to the freight traffic manager of the New York, New Haven & Hartford at Boston. He then served in a similary capacity in the office of the general freight agent at the same point and in 1908 was promoted to assistant general freight agent at Boston. In 1921 he was appointed general freight agent at New Haven, Conn., and in July, 1924, he was promoted to freight traffic manager, the position from which he is retiring.

Engineering, Maintenance of Way and Signaling

T. A. Allan, chief signal inspector in the office of the signal engineer of the Central region of the Canadian National at Toronto, Ont., has been promoted to superintendent of signals of the Southern Ontario district, with headquarters at the same point, succeeding **H. L. Black,** who has been appointed superintendent of signals of the Toronto Terminals Railway, a newly created position.

Mechanical

W. E. Harmison, master mechanic of the Erie, at Meadville, Pa., has been advanced to district master mechanic, New York district, with headquarters at Secaucus, N. J., succeeding **George Thibaut,** transferred to Port Jervis, N. Y., to succeed **E. Pool,** master mechanic, who has been transferred, in the same capacity, to Marion, Ohio. **G. E. Lund,** master mechanic at Marion, has been appointed to a similar position at Meadville, Pa., succeeding Mr. Harmison.

Obituary

George B. Aleman, general agent for the National of Mexico at St. Louis, Mo., died in that city on August 6.

Henry C. Callahan, general agent of the freight department of the Chicago, Rock Island & Pacific at Houston, Tex., died at his home in that city on August 3 at the age of 64 years.

Hansford T. Halbach, assistant car accountant of the Nashville, Chattanooga & St. Louis, with headquarters at Nashville, Tenn., died at his home in that city on August 9, following an 18 months' illness.

Thomas H. Lantry, general manager of the Northern Pacific lines west of Paradise, Mont., with headquarters at Seattle, Wash., died of heart trouble at his hotel in that city on August 2. Mr. Lantry, who had been engaged in railway work for 42 years, was born at McGregor, Iowa, in 1867. He entered railway service in 1888 as a telegraph operator on the Chicago, Milwaukee, St. Paul & Pacific, then becoming a train dispatcher on the Minneapolis, St. Paul & Sault Ste. Marie in 1889. Later Mr. Lantry was a dispatcher on the Atchison, Topeka & Santa Fe, the Great Northern and the Chicago, Burlington & Quincy, and on the Northern Pacific at Spokane, Wash. In 1907 he was promoted to trainmaster on the Northern Pacific, in 1911 to division superintendent and in 1917 to assistant to the vice-president. He served in Siberia as a lieutenant-colonel in the Russian Rail-

T. H. Lantry

way Service Corps, returning to the Northern Pacific in 1920 as assistant to the general manager. Later in the same year, he became division superintendent at Livingston, Mont., then being transferred to Seattle, Wash., where he remained until 1924, when he was promoted to general superintendent at Livingston. Mr. Lantry was further promoted to general manager of the lines east of Paradise, with headquarters at St. Paul, Minn., in 1926, and in July, 1929, he was transferred to the position held at the time of his death, that of general manager of the lines west of Paradise.

W. L. Robinson, superintendent of fuel and locomotive performance of the Baltimore & Ohio, with headquarters at Baltimore, Md., and a former president of the International Railway Fuel Association, who died suddenly at his home in Jessup, Md., on August 7, following a brief illness, was born in Danville, Va., on October 6, 1883. Mr. Robinson, whose entire railroad career, of some 26 years, was wholly with the Baltimore & Ohio, entered the service of that company as a special apprentice in the Mt. Clare shops, Baltimore, in 1904, after graduating from Purdue University. Following a three-year apprenticeship, he became a special inspector in the mechanical department, later being promoted to enginehouse foreman at Garrett, Ind. In 1911, he was advanced to superintendent of shops at Martinsburg, W. Va., returning to Baltimore in the same year as special inspector at the Mt. Clare shops. In April, 1912, he was further promoted to road foreman of engines of the Baltimore division of the Baltimore & Ohio, and in October of the same year he was advanced to the position of supervisor of fuel consumption. After serving in this capacity until March, 1918, Mr. Robinson resigned from the service of the Baltimore & Ohio to accept a position with the operating department of the E. I. du Pont de Nemours Company at Wilmington, Del., returning to railroad service in October of the same year as supervisor of fuel consumption on the Baltimore & Ohio Western lines, the Dayton & Union and the Dayton Union (both then operated by the Baltimore & Ohio), with headquarters at Cincinnati, Ohio. When this position was abolished two months later, Mr. Robinson was appointed superintendent of fuel and locomotive performance of the same roads, serving in this position until June, 1919, when he became division master mechanic of the Illinois division of the Baltimore & Ohio at Washington, Ind. In January, 1921, he was appointed superintendent of fuel and locomotive performance of the Baltimore & Ohio with headquarters at Baltimore, Md., which position he held until the time of his death.

In addition to his regular duties with the Baltimore & Ohio, Mr. Robinson has been active in the work of a number of railway associations, particularly with the International Railway Fuel Association. As mentioned above, he served as president of that association during 1921 and 1922 and was a vice-president of the same organization from 1916 to 1918 and again from 1919 to 1921. He was also a member of the executive committee from 1914 to 1916 and from 1922 to 1925, and chairman of the advisory committee from 1926 to 1929, as well as the author of various reports presented at conventions and a member of various topical committees. From 1914 to 1917 he also served as vice-president

W. L. Robinson

of the Traveling Engineers' Association and from 1925 to the present was a member of the executive committee of that organization. In 1918, he was a vice-president of the Smoke Prevention Association. Mr. Robinson was also active in safety work on the Baltimore & Ohio, serving on the general committee representing the mechanical department of that road at the time its safety campaign was first organized.